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THE UNIVERSITY OF ALBERTA

PLANNING IN WRITING: EVIDENCE FROM COGNITIVE TESTS AND THINK-ALOUD PROTOCOLS

BY

RAMA K. MISHRA

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA
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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Planning in Writing: Evidence from Cognitive Tests and Think-Aloud Protocols submitted by Rama K. Mishra in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

Dr. R. F. Mulcahy (co-supervisor)

Dr. T. O. Maguire (co-supervisor)

Dr. F. D. Snart

Dr. J. S. Goldberg

Dr. G. C. Hess

Dr. R. Jackson

Dr. C. K. Leong (external examiner)

Date: April 23, 1992

DEDICATED

TO

DAD AND MOM

FOR THEIR FAITH IN ME

AND

TO

DR. J. P. DAS

FOR HIS

SUPPORT AND ENCOURAGEMENT

IN EVERY POSSIBLE WAY

ABSTRACT

Two studies investigated the role of planning in writing for good and poor writers. A structural relationship among measures of general problem solving, planning and organization in composition, and writing was then explored.

In the first study, 107 students wrote a story in response to the stimulus picture of the Test of Written Language (TOWL) (Hammill and Larsen, 1988). This story was scored using both the criteria for the spontaneous writing part of the TOWL, and the rating scales for the Planned Composition (Ashman, 1978). All students were administered three planning tasks from the Cognitive Assessment System (Das, and Naglieri, 1989). Performance for good writers was significantly better than for poor writers on all the tasks of planning, and all the variables of planned composition. The correlation for writing and planned composition was moderately high (.52), but low for writing and planning (.20). The data for the total sample supported a structural model, in which one unidirectional path was indicated from planning to planned composition, and another unidirectional path was indicated from planned composition to writing. The regression weight describing the path from planning to writing was low and considered nonexistent.

In the second study, 9 good writers and 11 poor writers, selected from the first study, were asked to write an essay while thinking aloud. Following completion of the writing task, students were asked questions regarding their writing process. The results indicated that good writers were significantly different from the poor writers in terms of taking notes and the amount of time spent on writing. Analysis of the verbal reports on five indicators of planning supported the differences in how good and poor writers plan for writing an essay. The poor writers were found to be less aware of the knowledge and had less control of the strategies that were employed by the good writers.

The present study supported earlier findings on the planning and organizational difficulties of poor writers. It also extended the basis for these deficiencies to more basic processing difficulties in cognitive planning. The implications for process based remediation to improve writing skills were discussed.

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TABLE OF CONTENTS

CHAPTER		PAGE
I	INTRODUCTION	1
II	SELECTED REVIEW OF RELATED LITERATURE	5
	A. Introduction and Chapter Overview	5
	B. Theories of Writing Process	6
	1. Hayes and Flower's Model of Writing	6
	2. Bereiter and Scardamalia's Model of Writing	9
	3. Biggs Model of Writing	13
	Summary and Discussion: Theories of Writing	16
	C. Planning	18
	I. Models and Conceptions of Planning	18
	1. Definitions	18
	2. The Origins and Development of Planning	19
	3. Types of Plans	22
	II. Planning and the PASS Model	27
	1. The PASS Model	27
	2. Empirical Evidence for Planning Measures	32
	D. Planning and Writing	34
	E. Summary and Plan of Action	39
III.	DEFINITIONS, HYPOTHESES, AND RATIONALE	42
	Definitions	42
	Statement of Hypotheses	43
	Rationale for the Hypotheses	45

CHAPTER		PAGE
IV.	STUDY 1: METHOD AND RESULTS	48
	Subjects	48
	Procedure	48
	Description of Tests	50
	Results and Discussion	57
	Comparison of Good and Poor Writers	57
	Comparison of Groups with a Covariate	61
	Relationship among the Variables	63
	Separate Correlations for Good and Poor Writers	67
	Factor Structure of Planning and Writing with other Variables	72
	Independence of Writing and Planning Constructs	74
	Linear Structural Relationships among Planning, Planned Composition, and Writing	74
	Summary of the Results	82
V.	STUDY 2: METHOD AND RESULTS	85
	Background of the Study	85
	Subjects	86
	Procedure	86
	Procedure for analyzing verbal reports	87
	Results and Discussion	89
	Group Difference: Planning tests, Rating Scales, Gender, and Preferred Question	89
	Group Difference: Note taking, and Main Essay	92
	Analysis of Thinking Aloud Protocols and Interview	99
	Summary of the Results	111

CHAPTER		PAGE
VI.	CONCLUSIONS	114
REFERENCES		120
APPENDIX A:	Consent forms	131
APPENDIX B:	Discourse rating: Instructions for teachers	133
APPENDIX C:	Record forms: Tests of planning	134
APPENDIX D:	Planned composition rating scale	138
APPENDIX E:	Thinking aloud instructions, probes etc.	139
APPENDIX F:	Tables 17 to 25	142

LIST OF TABLES

		Page
Table 1.	Means and Standard Deviations of Age in Years for Boys and Girls in the Two Schools	49
Table 2.	Multivariate Analysis of Variance of Planning Tasks by Poor and Good Writers	58
Table 3.	Multivariate Analysis of Variance of Planned Composition Variables for Poor and Good Writers	60
Table 4.	Multivariate Analysis of Covariance for the Tests of Planning by Poor Writers and Good Writers with Verbal Intelligence as a Covariate	62
Table 5.	Multivariate Analysis of Covariance for the Planned Composition Variables for Poor and Good Writers with Verbal Intelligence as a Covariate	64
Table 6.	Correlations for Writing, Planning, and Planned Composition Variables	65
Table 7.	Correlations for Writing, CTBS, CCAT, Teacher's Ratings and School Performance	66
Table 8.	Multivariate Analysis of Variance of Intelligence Measures for Good and Poor Writers	69
Table 9.	Correlations of Planned Composition Variables with Planning and Writing for Poor and Good Writers Matched on Verbal Intelligence	70
Table 10.	Principal Component Analysis of Planning and Writing Tasks with other Tests: Orthogonal two Factor Solution	73
Table 11.	Principal Component Analysis of Writing, Planned Composition, and Planning Tests: Orthogonal Solution	75

Page

Table 12. LISREL Maximum Likelihood Estimation of Planning, Planned Composition, and Writing Relationship for Grade 8 Children 80

Table 13. t-tests for Planning, and Planned Composition Variables for the Poor and Good Writers 90

Table 14. t-tests for the Ratings by Two Judges on the Essays Written by Good and Poor Writers 93

Table 15. t-tests for Total Time, Final Draft Writing Time, Total Words, and Speed of Writing 95

Table 16. Mean, SD, Median, Minimum, and Maximum Scores for Total Time, Final Draft Writing Time, Total Words, and Speed of Writing for the Poor and Good Writers 96

Table 17. Interpreting the Questions and Choosing a Topic: Good Writers 142

Table 18. Interpreting the Questions and Choosing a Topic: Poor Writers 145

Table 19. Statements Emphasizing the Importance of Audience 149

Table 20. Statements Concerning a Good Writer and a Poor Writer: Poor Writers 150

Table 21. Statements Concerning a Good Writer and Poor Writer: Good Writers 152

Table 22. Suggestions to the Young Writer as to how S/he Should Write an Essay: Poor Writers 154

Table 23. Suggestions to the Young Writer as to how S/he Should write an Essay: Good Writers 156

Table 24. Self Evaluation Statements by the Good Writers 158

Table 25. Self Evaluation Statements by the Poor Writers 159

LIST OF FIGURES

		Page
Figure 1.	Structure of the Writing Model (Hayes and Flower, 1980)	7
Figure 2.	Structure of the Knowledge Telling Model (Bereiter and Scardamalia, 1987)	11
Figure 3.	Structure of the Knowledge Transforming Model (Bereiter and Scardamalia, 1987)	12
Figure 4.	Model of Essay Writing (Biggs, 1988)	14
Figure 5.	A Developmental Taxonomy of Plans and Planning (De Lisi, 1987)	28
Figure 6.	PASS Cognitive Processing Model (Naglieri and Das, 1990)	30
Figure 7.	Planning Structural Architecture (Naglieri and Das, 1990)	31
Figure 8.	A Path Diagram of Planning, Planning in Composition, and Passage Writing	77
Figure 9.	A Path Diagram of Planning, Planned Composition, and Spontaneous Writing	79

CHAPTER I

INTRODUCTION

The effective power of writing on the readers' thinking has been recognized for at least 20 centuries. In "The Phaedrus" (1 century A.D.), Plato warned Greeks of the dangers of "writing". He believed that reliance on written records may erode people's capacity to commit information to memory. More importantly, he feared that, because writing has a life of its own, apart from its author, it will encourage expression that might destroy a progressive civilization. In more recent times, Bruner (1966) was impressed by the process of writing as an ultimate tool for thinking and its profound difference from "speaking". To talk about an incident requires the speaker to narrate as the event unfolded to the experiencing person, as if the person was only a passive witness. The same incident, in the written form may involve an active control of an abstract representation of a communication system, the intended reader, the incident, after-thoughts etc. Vygotsky (1978) along with Bruner (1966) have suggested that the act of writing promotes thinking in at least two ways: (1) writing allows the writer to review and reflect on the principal ideas more deeply, (2) because of the time it takes to write and the opportunity to revise, it enhances the possibility for planning and critical thinking. Plato and Bruner are both correct in their common position that writing and speech are not merely alternate and equivalent forms of expression, but are profoundly different in both functional and structural properties.

In a world where increasingly more knowledge must be acquired to be competent, the precision in imparting information, particularly in the written form, is immensely important. Because of this demand, a wide range of people find themselves in need of improving their writing skills. The most conspicuous of these are the non native speakers (Shaughnessy, 1977), university students (Lyons, 1976), as well as bureaucrats and business writers (Odell, 1980). Thus it appears that writing efficiency is not a concern

limited to an exceptional group of people but rather a matter of the majority. The data from the National Assessment of Educational Progress (1980) in the United States have shown evidence of a decline in writing standards in schools during the period 1969 to 1979. It is possible that a decline may in fact represent dissatisfaction with writing competence due to a rise in expectations, and trend in occupations needing more communication through written medium. The response to combat this perceived incompetency in writing can be noted in three major areas: educational evaluations, public access to documents, and instructional practices. The educational institutions introduced systematic evaluations of writing abilities for the first time and opened a major subject of research to address the thorny issue of preserving quality through quantitative assessment (Isaacson, 1988). In 1978, President Carter issued an order (E012044) to publish government documents in a language which is comprehensible to the people for whom it is targeted. A similar reform in the language of law was called for in Canada only recently. There has been a recognition that not much writing is done in schools (Christenson, Thurlow, Ysseldyke, and McVicar, 1989), that writing activities give little motivation or scope for higher composing abilities (Scardamalia and Bereiter, 1986) , and that most teachers from elementary school through university have not been adequately prepared to teach writing (Morrison & Austin, 1977).

In recent years, many new areas of educationally relevant research on writing have emerged. Scardamalia and Bereiter (1986) have provided a list of ten different areas that evolved during the last decade. They are "Development of written symbolism", "Discourse analysis", "Story grammar", "Basic writing", "Rhetoric research in instruction", "Writing apprehension", "Classroom practices", "Student response to correction", "Composing process" and "Neuro-psychological basis of writing". This list can provide an appreciation of the breadth of interests of the researchers in this field. However, research on writing is still considered to be in its infancy when compared to reading as an object of research. The "composing process" of writing is of particular interest to cognitive scientists, who are interested in the question of what goes on in the mind as individuals compose text.

Research in this area has greatly benefited from having subjects think aloud while composing. The theories of writing that are provided by various authors on the basis of the composing processes include those of Hayes and Flower (1980), Bereiter and Scardamalia (1987), and Biggs (1988). The most important aspect of the knowledge of the composing process is its usefulness in identifying the difficulties in children's writings. The demands of a writing process can be characterized as constituting two roles, the role of the author, and the role of the secretary, across three steps involving planning, transcribing, and reviewing (Isaacson, 1989). The "author's role" involves getting ideas, organizing thoughts, as well as selecting and arranging words and phrases. The "secretary's role", on the other hand, deals with the physical effort of writing and with the mechanical aspects (spelling, capitalization, punctuation etc.) of the writing task. In the planning stage the author is free of the secretary's role while generating ideas. However, in the subsequent stages of transcribing and reviewing, both roles are summoned, increasing the memory load for the writers. During transcribing the "secretary" is involved in the physical effort needed to write following the rules of the language, while the "author" tries to focus on the ideas, audience, and rhetorical purpose with the overall plan in mind. During the reviewing process, the secretary proofreads at the word and sentence level; whereas the author monitors at the level of the global idea. The supporters of the "constructivist view" (DuCharme, Earl, and Poplin, 1989) denounce a dichotomy of language into composition skills (author) and language skills (secretary). It is argued that poor writers have difficulties with both these aspects of language. Some researchers maintain an extreme position in attributing the emphasis on mechanics (grammar etc.) as the basis for LD writer's lack of focus on the idea generation, planning and organization aspects of writing (Barenbaum, 1983). Thus, separating those two aspects is considered detrimental to the teaching and learning of writing by these authors.

Recently a small group of researchers have extended the search for the differences in the cognitive aspects of the composing process of the writers to metacognitive aspects of

writing (Englert, Raphael, Fear, and Anderson, 1988; Englert and Thomas, 1987; Wong, Wong, and Blenkinsop, 1989). These authors have reported LD students' lack of awareness of the writing strategies employed by the good writers. Thus, both the cognitive and metacognitive inquiry of the good and poor writers have shown evidence for planning and organizational difficulties that are independent of deficiencies in either the mechanical aspects of the language, or in intelligence. Some researchers argue that this deficiency is a result of cognitive delay on the part of the poor writers, that are accumulated in earlier years (Wong et al., 1989). An alternative explanation can be provided by the Planning-Attention-Simultaneous-Successive (PASS) model (Das, Kirby, and Jarman, 1979; Kirby and Das, 1990; Naglieri and Das, 1990; Naglieri, Das, and Jarman, 1990). Based on the three functional units of the brain proposed by Luria (1966,1970,1980), the PASS model assumes four different ways of how incoming information is processed. Difficulties in one or more of these processes are shown to affect cognitive functions that utilize those processes (Das, 1988; Das, and Cummins, 1982). The planning process in particular has been shown to be deficient in children who scored low on a composition rated on "organization" (Ashman, 1978; Ashman and Das, 1980). From these findings it can be hypothesized that children experiencing planning and organizational difficulties in essay writing may be poor in the "planning process" of the PASS model.

The purpose of the present study was to address two major issues: (1) to compare poor and good writers in terms of their ability to process cognitive tasks of planning, and their utilization of skills that reflect planning and organization in writing; (2) to investigate the relationship of the efficiency in cognitive tests of planning, ratings of the utilization of planning and organization in writing, and performance in a test of written language. The utilization of planning and organization was assessed in two ways. One direct approach involved assigning rating scores for each child on standardized scales. The other approach was relatively indirect and used inferences from thinking aloud protocols collected during writing, and from the interviews conducted immediately after writing.

CHAPTER-II

SELECTED REVIEW OF RELATED LITERATURE

A. Introduction and Chapter Overview:

Interest in the planning aspect of writing is relatively new. Because of the implication of planning in a variety of cognitive functions, there has been some confusion concerning its utility in specific academic skills. With a shift in the focus from the linguistic aspects of writing to the organizational aspects of writing with exceptional children in recent years, a growing body of research is beginning to evolve. The conceptions of "planning" and "writing" are still wide apart and the role of planning in writing is only understood in a very limited way. The goal of this brief review is to present a taste of these two apparently different concepts and establish a link that may be useful in furthering our knowledge of their complex relationships and provide a possibility for a remedial instruction for the children who are experiencing difficulties in writing.

This chapter is organized into three main sections. The first section deals with three theories of writing to show how planning is construed in each of them. This has been presented first, because theorization of a construct precedes and dictates search for empirical evidence. After planning is shown as a key component in writing from different theoretical perspectives, the origin, development, and conceptions of that component is examined in the second section. Included in that section is a particular approach to the study of planning, the Planning-Attention-Simultaneous-Successive (PASS) model, and some supporting evidence for that model. Finally, the available literature on the utilization of planning in written composition is reported. It must be pointed out here that this part of the review is restricted to the last five years because of two reasons: (1) to present the most current view, and (2) the interest in the planning and organization aspect of writing is very new and not much is available before that period. At the end of the chapter a brief outline of our study is provided as it relates to the current focus in writing research.

B. Theories of Writing Process:

1. Hayes and Flower's Model of Writing:

Following the method of protocol analysis from cognitive psychology, Hayes and Flower(1980) attempted to study the processes of writing from hundreds of thinking aloud protocols collected over a number of years. From these studies they found evidence that "writing is goal directed, that writing goals are hierarchically organized and that writers employ three major processes, planning, sentence generation, and revision, to accomplish these goals" (Hayes and Flower, 1986). From the active components of Hayes and Flower's writing model (see Figure 1) in *planning*, writers generate ideas and organize them into a writing plan. In *sentence generation*, writers produce formal sentences intended to be part of a draft. In *revising*, the writers attempt to improve a draft. According to the authors these three processes are heavily interactive and may have two aspects: first, the writing task may be performed in parts, so that the writer plans, generates and revises a first paragraph, then plans, generates and revises a second paragraph and so on; second, while revising the writer may discover the need for a transitional paragraph and invokes again the whole writing process, that is, planning, generating, and revising.

THE MODEL

The model (See Figure 1) has three major blocks: Task environment, Writer's long term memory, and the Writing process.

Task Environment:

The task environment includes all the peripheral elements such as the writing assignment, that is, a description of the topic, intended audience and information relevant to

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Figure 1. Structure of the Writing Model (Hayes and Flower, 1980)

the writers motivation. Once writing is initiated the text or ideas generated during the first occasion can act as the "task environment" for subsequent writing.

Writer's Long Term Memory:

This is the writer's knowledge base about many topics, about many audiences and generalized writing plans, perhaps in the form of a story grammar or a "wh" formula such as "who, what, where, when, why?"

Writing Process:

As indicated earlier Hayes and Flowers (1987) proposed that writing consists of three major processes: planning, sentence generation (or translating), and revising (or reviewing).

The planning process consists of generating, organizing and goal setting subprocesses. The function of the *generating* process is to retrieve information relevant to the writing task from long term memory. It is assumed that memory probes are initiated by the topic and audience presented in the task environment. Subsequently new memory probes are retrieved in associative chain, until it's broken by irrelevant material, which is not useful to the writing task. A search restarts with a new memory probe derived from the useful material already retrieved in the past. Usually, the generating process is accompanied by brief note taking in the form of single words, sentence fragments to be expanded, modified or altered in the future.

The function of the *organizing* process is to select the most useful materials retrieved by the generating process and to organize them into a writing plan. This plan may be structured temporally or hierarchically and is often systematically indented, numbered or alphabetized or possibly all of these.

The *goal setting* process identifies and stores criteria that may have been retrieved by the generating process by which a text can be judged. The function of the *translating* process is to take material from memory under the guidance of the writing plan and to transform it into acceptable written English sentences.

Finally, the function of the *reviewing* process is to improve the quality of the written text in two subprocesses: *reading* and *editing*. The *editing* process examines violations in writing conventions and inaccuracies of meaning and evaluates materials with respect to the writing goals. *Reading*, on the other hand, involves systematic examination and improvements of the text, which typically occurs when the writer has finished a translation process.

2. Bereiter and Scardamalia's Model of Writing:

Bereiter and Scardamalia's (1987) approach to the writing process is somewhat different from that of Hayes and Flower. Typically these authors found differences in the composing processes of skilled and less skilled writers in terms of the operations performed on the knowledge. Less skilled writers appeared to do relatively little transformation of knowledge when processing it into written form. More skillful writers, on the other hand, were found to carry out a variety of problem solving operations involving content, identifying goals, searching, testing and revising goals in the course of writing. To explain the writing processes of skilled and unskilled writers, Bereiter and Scardamalia (1987) have postulated two models: knowledge telling and knowledge transforming. They argue that these contrasting models provide descriptions of two structures for controlling the process of generating text. They believe that if the task were simply to explain the deficiencies of novice writing, then a single model may be enough. That model might represent the planning, problem solving operations involved in skilled composing of Hayes and Flowers (1980, 1986, 1987) and the weakness of novice writing could be attributed to a lesser frequency form of such operations. According to Bereiter and Scardamalia, the more challenging problem, however, is to explain how novice writers manage to write as well as they do. The knowledge-telling model attempts to solve this problem by representing an alternate route to attain coherence, organization and topical

relevance in writing, a route that does not depend on problem solving activities. Expert writers are assumed to have access to both a knowledge-telling model and to a more complex and effortful knowledge transforming model, using whichever is appropriate to task demands; whereas novices are assumed to follow the simple model for the most part and have access to the problem-solving model only under facilitative conditions.

Knowledge Telling Model:

This is the simpler model referred to earlier (see Figure 2). As the model indicates, a composing process begins with a writing assignment, self-chosen or part of an instruction. First the assignment is broken into topic identifiers (sub-headings), which serve as cues to prime associated concepts through a process of spreading activation (Anderson, 1983). Once an item of content is retrieved, it is subjected to tests of appropriateness. These could be minimal tests of whether the item "sounds right" in relation to assignment and to the text already produced or they could be rigorous tests of interest and persuasive power. If the item passes the tests, it is entered into the notes or text and the next cycle of content generation begins.

Knowledge telling provides a natural and efficient solution to the problem immature writers face in generating text content. It is favorable to report personal experience and preserves the overall form and style of oral language. There is also no greater amount of planning or goal setting than ordinary conversation.

Knowledge Transforming Model:

Bereiter and Scardamalia (1987) believe that to account for the interaction between text processing and knowledge processing, it is necessary to have a model of more considerable complexity than the model of knowledge transforming (see Figure 3) which basically contains the knowledge-telling process, but is also provided with a problem solving process involving two different kinds of problem spaces. In the content space,

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Figure 2. Structure of the Knowledge Telling Model (Bereiter and Scardamalia, 1987)

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Figure 3. Structure of the Knowledge Transforming Model (Bereiter and Scardamalia, 1987)

problems of belief and knowledge are worked out and in the rhetorical space, problems of achieving goals of the composition are dealt with. The connections between the two problem spaces indicate that output from one space serves as input to the other. For instance, a writer working in the rhetorical space on a problem may decide to define a concept and thus go back to the content space. In the process of building arguments in favor or against an issue it may be necessary to modify the text already written and this is transformed to the "rhetorical space". This kind of interaction between problem spaces are the basis for reflective thought in writing. Some writers, however may intentionally suppress problem solving operations until a first draft is completed. In this way knowledge telling remains one of the capabilities of the knowledge transforming model. But the distinct characteristics of the knowledge transforming model lie in formulating and solving problems continuously in a two way interaction between knowledge and text.

3. *Biggs' Model of Essay Writing:*

Biggs (1988) model of Essay Writing (see Figure 4) can be considered as an extension of Bereiter and Scardamalia's knowledge transforming model. He has distinguished three different stages of writing: intentional, parawriting and writing. *Intentional* includes affective and aspirational aspects prior to writing, *parawriting* includes planning and knowledge updating, and *writing* includes composing, transcribing, reviewing and revising.

The intentional aspects of writing seem to be the most important addition of Biggs to the earlier theories. By asking student writers how they felt about an essay, Biggs found two general kinds of responses; a deep approach and a surface approach. The deep approach was characterized by a high degree of personal involvement, anticipation of an enriching and meaningful experience and usually the expectation of a high grade. The surface approach, on the other hand was reflected by little desire for involvement and some

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Figure 4. Model of Essay Writing (Biggs, 1988)

apprehension at the outcome of the assignment. Biggs observed that these responses reveal two quite different orientations to the essay and subsequent parawriting and writing activities are expected to differ accordingly.

The major parawriting activities relate to planning. Biggs has proposed a sequence of seven steps to explain how writers may go about planning an essay.

1. *Interpret the question:* This step involves a student's need to understand the question clearly and perceive teacher's intentions.

2. *Form global intentions:* A knowledgeable writer proceeds to make a detailed outline and decides the format of the essay.

3. *Summon knowledge, define lacunae, obtain further knowledge:* As the question is interpreted, the writer's existing knowledge about the topic is summoned and sources for obtaining further needed knowledge are planned.

4. *Decide on a particular structure, prioritize and organize:* This step involves outlining the main points in a note form and forming a hierarchy of items arranged according to level of importance.

5. *Opportunistic planning:* This is a term to describe planning that alters shape and direction of the composition at any point, when incongruity is perceived during writing or revising.

6. *Monitoring criteria:* Planning process is often guided, explicitly or implicitly by a set of criteria such as consideration of the audience, conventionality (or originality) in form and content, style and compatibility with intentions.

7. *Form focal intentions:* The final step is to refine the unspoken thoughts and provide a "mystique surrounding composition" (Biggs, 1988) before it is ready for transcription.

Writing begins with transcription, the written form of the focal intentions and continues with review to monitor the criteria mentioned above. If a change is necessary then revision will commence at any stage of parawriting; the question might be seen to have

been misread, the intentions might be inappropriate or more knowledge necessary, with consequent restructuring and rewriting. Biggs maintains that there is a strong difference between surface and deep approaches to writing in terms of how they are reviewed. Students endorsing a surface approach tend to review frequently with respect to words and sentences, while those using a deep approach review relatively infrequently. When the latter do review, they separate review of discourse features from review of surface features such as spelling, punctuation, word choice and syntax. Biggs views revision as an integral part of writing, which involves rethinking, composing and replacing old text with new. Writers who fail to make that revision at the level of discourse may also have a deficiency in planning. Planning deficiencies can be evidenced prior to the revision from any of the seven steps in parawriting activities.

Summary and Discussion: Theories of Writing

The focus of each of the three theories of writing presented above is somewhat different. At the same time, it can be seen that there is a great deal of similarity among them. Hayes and Flowers viewed writing as primarily consisting of planning, translating and reviewing initiated by a task environment such as an assignment and guided by the writer's long term memory that holds the writer's knowledge of the topic, audience and writing scheme. Bereiter and Scardamalia , however, didn't think that Hayes and Flowers' model could explain how ordinary writers write even without any demonstrable planning and organization. So, they provided two models: the knowledge telling model, primarily for the ordinary writing, and the knowledge transforming model for the efficient writing, which employs problem solving processes. Biggs basically agreed with Bereiter and Scardamalias' contention, but didn't see the necessity for two different models. He explained the difference in the writings of expert and novice writers in terms of their intentions: a deep approach versus a surface approach. A writer with a deep approach may experience greater degree of personal involvement and view the task as "a learning

experience". On the other hand a writer with a surface approach may have lesser desire and view the task as "a chore to be done". Consequently, the planning, composing, and writing processes would be different, determining the quality of the end product.

The planning processes presented by all three models of writing are of substantial relevance to this study. Planning, envisioned by Hayes and Flowers' model involved "generation" of information through a memory retrieval process, "organization" of the relevant material into a writing plan, and "goal setting" in the form of building a criterion to judge the text in terms of relevance. Bereiter and Scardamalias' conceptualization included the planning process only in the "knowledge transforming model" and is characterized by a dialogue between the content and rhetoric problems within the limits of a tentative goal. Biggs's description of the planning process included the views of both the previous models encompassing several elements, such as interpretation of the question, forming global intention, deciding structure, opportunistic planning, and monitoring criteria. Theorists may vary in terms of the boundaries of the function of planning process, but nevertheless endorse unequivocally its role in writing. Bereiter and Scardamalia would view planning as a writing process exclusively for expert writers and Biggs as well as Hayes and Flower would view utilization of planning among writers, both expert and novice, as a matter of difference in degree. Thus, experienced writers would be expected to go through a process of planning that may include all or some of the steps suggested by the different models above. On the other hand, inexperienced writers would show some or a little planning activity, as implied by Hayes and Flower, and Biggs, or no planning or problem solving activity as indicated by Bereiter and Scardamalia. Several aspects of such a conclusion must be clarified. First of all, the three models being discussed here have provided no criteria for determining who can be considered as an expert writer and who can be considered as a novice writer. Thus, when one model is contrasted with the other, for the role of planning in particular, there is very little evidence to assume that all the models are comparing the same degree of writing competency of the writers. Secondly, Bereiter and

Scardamalias' knowledge telling model (the model that has no planning and problem solving strategy) does allow a process called "tests of appropriateness" (see Figure 2) to determine if the material available to the writer is relevant to the "mental representation of the assignment". In Hayes and Flowers' model "goal setting", an aspect of planning sets criteria of judging text, and may seem similar in some ways to the "test of appropriateness" of Bereiter and Scardamalia. Biggs' "monitoring criteria" of the planning process may be considered similar to this idea as well. Thus, most likely what aspects are considered part of a planning process may be different for these authors and hence the apparent difference in their conceptualizations. Is it possible that writers may be different on some aspect of planning and not others? If there is a difference in some or all aspects of planning, is it dependent on how writing competency is defined? These questions, which arise from a synthesis of the three theories described above need to be explored.

C. Planning

I. *Models and Conceptions of Planning*

1. Definitions

Planning has been implicated in a very wide variety of cognitive functions. Reference to the planning function is frequently reported in problem solving (Newell & Simon, 1972), comprehension of narratives (Meyers, 1988; Meyers, Lytle, Palladino, Devenpeck, & Green, 1990; Schank & Abelson, 1977), behavioral attributions (Schmidt, 1976), analysis of metacognitive activities (Borkowski, Carr, & Pressely, 1987; Kurtz & Borkowski, 1984), memory development (Brown, Bransford, Ferrara & Campione, 1983), writing (Ashman & Das, 1980; Bereiter & Scardamalia, 1987; Biggs, 1988; Hayes & Flowers, 1980;), and in executive functioning (Cormier, Carlson, & Das, 1990; Das, 1980; Das, 1984; Das & Heemsbergen, 1983; Naglieri, Das & Jarman, 1990). Not

surprisingly, no two theorists share exactly the same view of planning. For example, it is defined as execution of a behavior that matches a scheme (Miller, Glanter, and Pribam (1960) and also anticipating a course of action (Hayes-Roth & Hayes-Roth, 1979). Scholnick & Friedman (1987) define planning as " a representation of the environment, anticipation of solutions to problems, and then monitoring of strategies to see whether they meet the problem". They believe that the diversity in the use of planning may be the result of an emphasis on any of the three levels of planning: (1) to act in the reality of a problem, (2) to act in accordance with an imagined scheme, and (3) to act as a mediator between the scheme and the behavior. The other source of confusion comes from its use in two frameworks, as a general cognitive skill, or as a context-specific activity. Theorists in the area of problem solving and executive functioning, referred to above, emphasize the general structure of planning activity and usually attempt to account for individual differences in planning efficiency in terms of the number of planning components present and the speed of their execution. On the other hand, in studies in the area of reading comprehension, memory, and writing, the focus is on context specific strategies and indication of planning is dependent on stylistic variations. To encompass both these approaches, Scholnick and Friedman (1987) describe planning "as a set of complex conceptual abilities that reflect knowledge, the ability to represent it flexibly and abstractly, the ability to recognize or set goals, strategic skills, and skills in monitoring, evaluating, and repairing strategies". French psychologist Hoc (1988) describes planning as " the elaboration and/or the implementation of plans" and plan as a "schematic and/or hierarchical representation whose function is to guide activity".

2. The origins and development of planning

Traditionally, five different aspects of planning skills have been the focus of the analysis. They are: representation, self-control, strategies, orchestration skills, and metacognition. Kagan (1984) links development of planning to representation of goals and

strategies for self-control. He claims that young children learn to reflect on the correctness, competence and appropriateness of their actions before, during, and after its execution. They compare this against the acquired (socio-cultural) standards to modify their actions and thoughts as a "space vehicle's program corrects its course in flight". In the course of development of an individual "the standards" become more complex due to a need for "cognitive consistency" among beliefs and actions. Kagan believes that the process of acquiring standards and acting on them through planned behavior may be influenced by biological as well as social agents.

The Soviet theorists attribute the origins of planning to verbal skill, which facilitates the development of "representation" and "self-control". For example, Luria (1976) believes that the children learn self control through parental directives to organize their action. Additionally, in the process of acquiring language, children exercise conscious decision making in determining a effective communication, which is then generalized to facilitate complex problem solving. Competency in verbal skills enables children to anticipate the behaviors that are effective problem solvers instead of doing it by trial and error. Vygotsky (1962) also recognized the role of language in planning. He emphasized the role of parental influence on language development. Verbal communication with the parents help children to practice vocal and subvocal talking to themselves. This internalization of language produces thinking skills that are essential for planning. Parents model thought, action, and self-guidance for defining problems, suggesting strategies and guiding their execution and outcome for their children. A similar theory is proposed by Miller, Galanter and Pribram (1960). They believe that new plans arise from revisions of old plans and from imitations of plans observed in others. Language helps the learner to talk about varieties of plans and monitor their execution. The knowledge of planning is then refined by the feedback from its outcomes.

Kreitler & Kreitler (1976) maintain that a program is devised to reach a goal in one of three possible ways; some are innate, some are learned directly, and some are

constructed through inferential processes. During the course of development, there is a progressive shift from the reliance on innate to learned to creatively constructed plans. In their comprehensive theory of planning the Kreitlers also recognized the importance of two other aspects of planning: meaning, and motivation. The meaning system represents the environment in a way that facilitates planning and is dependent on the person's cognitive development, and the motivational component is influenced primarily by acculturation.

For Piaget (1976, 1978) planning is an outgrowth of representation and understanding of casual and logical mechanisms. As children learn why particular actions work under certain conditions but not others to solve a problem, they form a "theory of domain" which forms the basis of anticipations. The construction of an adequate representation of the environment created by children's reflections on the outcomes of their actions produces planning.

Flavell and Wellman (1977), and more recently Borkowski, Estrada, & Milstead (1989) emphasize "metacognition" as another source of the development of planning. This includes sensitivity to one's own capacities and skills in general and while executing a particular task. The other component is the skill to match concepts and strategies to specific conditions for problem solving. Greater accessibility and experience in this skill may reflect effective planning.

Hayes-Roth and Hayes-Roth (1979) have presented a model of planning which is "opportunistic and multidirectional" to account for situations where serial processing is inappropriate. Their description of planning includes problem representation, goal definition, anticipation, action, and evaluation in a multidirectional sequence. The term opportunistic implies that decision at a given level may influence subsequent decisions at a different level. Planning takes place on a "common data structure called the blackboard", which is divided into five planes or windows that have further subdivisions or levels. The specialists (the production statements in a computer program) scan sections of the board and create new data on the basis of what they have read. The new information may be used

by other specialists or a central executive who decides the next action. Such a framework resembles a team rather than an individual problem solver. A description of the five planes follow. The "executive plane" determines and monitors allocation of resources during planning. The "metaplan plane" constitutes knowledge of the essentials of planning, such as the information on the goal, available resources, possible actions and constraints, knowledge of the modes of attack, choice among strategies based on cost, and the calculation of risk involved. These two planes of the blackboard set the framework for the problem and management of resources, where as the rest of the planes are involved in actual problem solving. The "plan abstraction plane" lists the general directive, the "knowledge base plane" provides information relevant to the directives, and the "plan plane" combines the two sources of information into actions. For example in a task where the individual is required to do errand planning on a map of the town, the abstraction plane provides a strategy such as "go to the closest cluster", the knowledge base plane contributes its location, and the plan plane chooses the procedure that tells the store to visit. The formulation of a plan may not necessarily proceed from the general to the specific. A person can formulate a strategy after noticing proximity of many errands or skip some errands to accommodate more important errands. Although the Hayes-Roths have worked with a specific type of plan, their model is capable of diagnosing a variety of problem solving methods. The Hayes-Roths believe that the capability of their model to discover the circumstances under which the planners bring alternative problem-solving methods is an important facet of the study of planning.

3. Types of plans

The different theorists described above have provided indirect account for varieties of planning in their conceptualizations. However, a detailed developmental taxonomy of planning comes from De Lisi (1987). The construction of the taxonomy was based on the assumption that a "plan is somekind of underlying entity that serves to organize and direct

behavior toward goal attainment". De Lisi has proposed four types of plans. Type 1 plans are purely functional as the individual is directed toward ends without a "deliberate representation or preconception" of means. In type 2 plans the organism represents means prior to their realization in behavior. In type 3 plans, the planner is aware of the importance of monitoring formation and execution of a plan. Finally, in type 4 plans the formation of the plan itself is an objective with the metacognitive awareness that execution may never occur. A more detailed description of the four types of plans follows.

a. Type 1 Plans.

De Lisi (1987) defines Type 1 plan as " a sequence of overt behaviors performed to achieve an objective". It is purely functional, and operates in a "automatically regulated fashion". Type 1 plans can be involuntary, voluntary, or a combination of both. In an involuntary plan the underlying basis for action may be inherited, where as the manifested behaviors are not inherited or are subject to modification. An example of this type of plan is a post-hypnotic suggestion, where the subject 's action is programed previously by another person, the hypnotist. Voluntary type 1 plans include sensorimotor behaviours (Piaget, 1952) which operate initially in a trial and error fashion, such as using an object to retrieve another object. The third class of type 1 plan which combines both voluntary and involuntary plans include any skilled motor responses such as driving a car, touch typing or producing a piece of instrumental music from memory and so on. In each of these instances of type I plans, the individual is aware of the goal and performs a series of behaviours to attain it without prior specification.

The origins of type 1 plans can be classified into two groups. One important source of habitual type 1 plans is the presence of a higher level plan, which guides the person through deliberate instruction, self or from others, to acquire a skill. All phases of the instruction, such as expectation of the outcome, commitment to the instruction etc. are guided by a higher level plan, but the overall objective is to form a habitual type 1 plan.

The other class of type 1 plan may not be guided by a higher level plan as found in infants and young children, who may be capable of only type 1 plans. The origins of these plans begin with the development of "intentional behavior" during the first year of life (Piaget, 1952). In Piaget's analysis of sensorimotor intelligence, the substage 4 has been identified as the origin of intentional behavior, where intentions precede and initiate movements toward goal. As infants begin to explore their immediate environment, parents try to block, modify, or displace their movements for reasons of safety, play etc. Such experiences of having their movements modified lead the infant to discover means (plans) to coordinate his/her actions with others. Frustrations in execution of plans also serve to enhance the child's ability to "anticipate behavioral outcomes" and refine his plans.

b. Type 2 plans

Type 2 plans are defined as "a deliberate sequencing of overt behaviors designed to facilitate goal attainment" (De Lisi, 1987). Like type 1 plans, type 2 plans are expressed overtly, but unlike type 1 the type 2 plans are "characterized by having goals and behavioral sequences anticipated in thought prior to action". The new feature of the type 2 plan is a "representational" component which serves to anticipate goals and formulate courses of action prior to their execution. The representational component is characteristically distinct from the goal and can be communicated, modified, or discussed with others without affecting the goal. However, in spite of the differentiation of the "representational component" of type 2 plan from its goals, it is not strategic, meaning that it is not monitored, checked, or evaluated in terms of its effectiveness in arriving at the goal. An example of type 2 plan can be found in a study done by Brown, Day, and Jones (1983). In their study students from four grade levels (five, seven, eleven, and college) were compared in terms of their abilities to make rough drafts prior to making summaries of stories previously memorized to a specified criterion. Making rough drafts and revisions to the rough drafts before writing the story was used as an index of planning. The results indicated that college students and eleventh graders were significantly more likely to plan

their summaries compared to the fifth and seventh graders. Additionally, the younger writers (fifth and seventh graders) were more likely to include less points for the second half of their summaries than the older writers (college and eleventh graders). De Lisi (1987) argued that use of his categorization of planning into types would be a better way of comparing these writers than a dichotomy of "plan" versus "no plan". Younger writers, who did not make a rough draft can be said to have used type 2 plans and older writers, who made rough drafts have used type 3 plans. The evidence for "symbolic representation", the characteristics of type 2 plans, were found more appropriately in the first half of the stories of the young writers. Brown et al.'s (1983) study also provides evidence for an age related shift from type 2 to type 3 plans. In Piaget's (1962) conceptualization, young children by the age of two begin to show "construction of symbolic function" or formulation of courses of action prior to their execution. This serves as a basis for type 2 plans.

c. Type 3 plans

A type 3 plan is defined by "a deliberate representation and strategic evaluation of anticipated outcomes and behavioral sequences designed to deal with them" (De Lisi, 1987). In a type 3 plan, the individual recognizes the need for a plan that initiates the plan, there is a strategic evaluation and comparison of formulated plans prior to execution. The second part of the process can lead to revision of a particular plan during its execution to accommodate appropriate changes. Two important features distinguish type 3 plans from type 2 plans. First, there is "increased symbolic complexity" to the representational component of the plan. This can lead to a variety of actions including use of notes, lists, computations, or consultations that may be detached from the primary task. Second, there is a monitoring mechanism that may begin the representational process at any time to add new material to the task. In the example of the study by Brown et al. above, the older writers had access to a type 3 plan, which was evidenced by note taking, drafting, making revisions to the draft before making the final copy. It should be noted here that a type 3

plan can occur without the help of any external aid (notes, diagrams etc.). Examples of such plans may be seen during problem solving strategies in games such as Chase, or Bridge played by experienced players, who could picture different moves of each side ahead of time in their mind and decide their best move.

d. Type 4 plan

A type 4 plan is defined as "an individual or collective deliberate effort to devise a plan; that is, construction of an acceptable plan is now an end unto itself rather than serving as a means toward a goal" (De Lisi, 1987). A type 3 plan is a strategic attempt to solve a problem in the immediate or future event, where as a type 4 plan may occur to address anticipated occurrences. De Lisi argues that type 3 plans can be classified as "problem solving" and type 4 plans as "problem finding". Type 4 plans have the character of justifying the means without the end. They are elaborate, "purely representational" and "metacognitive". Examples include planning for death, averting an expected crisis etc., where the planning is carried out with the conviction that the problem can be real. Thus the type 4 plans are more detached from the context compared to the type 3 plans and functional components of type 1 plans may be completely absent.

In summary, the four types of plans provide us a hierarchically arranged structure of planning progressing from type 1 to type 4. At any stage the planner can suppress the subsequent higher level planning and address the issue at a level appropriate for that problem. Bereiter and Scardamalia (1987) support such a speculation as seen before. They speculated that novice writers have access to a knowledge telling model and expert writers have access to the knowledge telling model as well as a knowledge transforming model to account for the problem solving processes. However, they also accepted the view that an expert writer may temporarily suppress the knowledge transforming model to gather information using the knowledge telling model first and then utilize the knowledge transforming model to revise their composition to develop their intended idea. Type 1 plans are purely functional and oriented to a habitual behavior. In type 2 plans the means for the

target behavior is represented to some degree of detail and directly related to the context. Type 3 plans are more strategic and it allows the individual to evaluate competing means to select the most appropriate one. Finally, type 4 plans are driven by metacognitive awareness that plans are needed for anticipated events and discussed among individuals in the form of knowledge that are not always functional. A summary of the 4 four different plans as described by De Lisi are presented in Figure 5.

II. *Planning and the PASS model*

The reasons for presenting Planning-Arousal-Simultaneous-Successive (PASS) model (Kirby & Das, 1990; Naglieri & Das, 1990; Naglieri, Das & Jarman, 1990) are two fold. First, it provides a conceptual model of planning along with other processes (Simultaneous, Successive, and Attention) as a comprehensive theory of information processing to help delineate the role of planning as an executive process (context free). Second, the planning process from this model is used in the context of writing (Ashman & Das, 1980), which is the focus of this research. Additionally, it provides a rationale for the use of planning tests from the PASS battery in this study.

1. The PASS Model

The PASS model originally proposed by Das, Kirby, and Jarman (1979) is based "broadly" on the neuropsychological work of Luria (1966, 1973, 1980). According to Luria, human cognitive processing involves three functional units, which can be related to specific areas of the brain.

The first functional unit is involved in maintenance of arousal, wakefulness, and attention. A minimum level of readiness is believed to be a necessary condition for appropriate interaction with the environment and analysis of behavior at the other functional units.

FIGURE REMOVED DUE TO COPYRIGHT RESTRICTIONS

Figure 5. A Developmental Taxonomy of Plans and Planning (De Lisi, 1987)

The second functional unit is responsible for reception, coding, and storage of information in hierarchically organized zones. In the primary zones information is processed in their respective sensory areas such as auditory, visual etc. The roles of secondary zones are of analysis of information and tertiary zones are of integration of information coming from the various primary zones. The integration of information occurs in two modalities, the simultaneous processes and the successive processes. The simultaneous processing allows the individual to examine interrelated elements from the stimulus environment such as examination of logical grammatical relations or solving figural matrices. Luria claims that "surveyability" or accessibility to inspection of all parts together is the key feature of simultaneous tasks. The successive processing, on the other hand, involves integration of stimuli in a linear order. For example in a digit span task, the subject is required to repeat numbers in a proper order. In real life, examples of an efficient sequential processing can be seen in speech production, where a series of vocal movements are produced in a rapid succession to generate a sound previously determined as meaningful. Whether a task is processed simultaneously or successively is not dependent directly on the mode in which the task is presented (Naglieri and Das, 1990), unless special effects are introduced in a task to maximize one or the other type of processing (as found in the tasks chosen for the PASS assessment).

The third functional unit is responsible for construction, execution, and evaluation of a plan of action for a cognitive activity that demands a systematic approach to problem solving. Depending on the nature of a problem, it requires application of attentional, coding (simultaneous and successive processes) and the knowledge base of the individual (see Figure 6). Naglieri and Das (1990) have proposed three basic aspects of planning: generation, selection, and execution. However, they have cautioned that the individual differences in the operation of these processes are influenced by one's knowledge base. Good planning involves a series of actions as presented in Figure 7. When a task is presented, externally or self generated, the individual searches for an existing plan or

FIGURE REMOVED DUE TO COPYRIGHT RESTRICTIONS

Figure 6. PASS Cognitive Processing Model (Naglieri and Das, 1990)

FIGURE REMOVED DUE TO COPYRIGHT RESTRICTIONS

Figure 7. Planning Structural Architecture (Naglieri and Das, 1990)

generates a new plan. The quality of the plan, and method of execution is dependent on the person's knowledge base. The execution and evaluation phases of the plan are interactive and the feedback from the evaluation cycle is fed into the construction unit if initiation of another plan or modification of the old plan is needed. This experience is then added to the knowledge base for future application. Thus failure to retain or increase the knowledge of an individual would result in plans of actions that are static and possibly less effective. More recently Das, Naglieri, & Kirby (in press) has pointed out that declarative knowledge (content knowledge), and procedural knowledge (knowledge of skills and strategies) may fail to affect efficiency unless the person develops the metacognitive awareness as to why that knowledge is important, when it should be employed, and how it is applied.

2. Empirical evidence for planning measures

Empirical evidence supporting the Planning-Attention-Simultaneous-Successive model comes from a number of sources. Studies that are related to planning tasks are of particular interest to this research.

In a study Das & Heemsbergen (1983) divided 60 college students into good and poor planners based on two planning tasks (Visual Search, & Planned Connections) of PASS. On a criterion measure of planning, Master Mind, the good planners took significantly fewer trials to break the code, and were engaged in several strategic behaviors demonstrated in their verbal protocols. These behaviors included, monitoring mistakes from previous trials, self talk, visual reminders, transfer of experience from a different activity and so on. The poor planners took more trials to break the code, and their verbal reports showed very little evidence of any planful behavior. Examples of their approaches included very little attempt to use reasoning and made statements such as "people usually prefer brighter colors", or "there must a trick to this" etc.

In another study reported by Das (1988), good planners and poor planners were selected on the basis of Visual Search, a planning test from the PASS battery and tested for

their recall and comprehension of 9 literary passages. Good planners recalled more main ideas, made more inferential statements, and modified their hypotheses more often as they read through a passage compared to the poor writers. Correlations of the planning test with reading achievement measured by decoding or reading comprehensions were not found to be significant. Thus evidence for use of strategies as a function of performance in planning was established.

A study reported by Ashman and Das (1980) showed promising evidence for use of planning tasks of the PASS battery in identifying planning behavior in writing. In their study a composition written in response to Picture 2 of the Thematic Apperception Test (TAT) was scored for "organization", representing "underlying plan and logical sequence" and factor analyzed with PASS tests. As expected, planned composition (the written composition scored for organization) loaded on the planning factor, with Visual Search and Planned Connections, which was orthogonal to the coding factors, the simultaneous and successive processing.

More recently, Naglieri, Das, Stevens, & Ledbetter (1991) tested the Planning, Attention, Simultaneous, and Successive processing model using the LISREL confirmatory factor analysis procedure and supported the independence of a planning factor. The data did not support any of the traditional models of abilities, such as a general intellectual factor of *g* (Jensen, 1986; Spearman, 1927), two factor memory-reasoning (Jensen, 1974), two factor verbal-nonverbal (Wechsler, 1974), or a three factor verbal-spatial-speed solution (Elliot, 1990).

Additional support is provided by the studies involving a dynamic assessment approach in planning. The assumption that poor planners will benefit from overt verbalization of the steps in solving a problem was tested in two studies. Cormier, Carlson, and Das (1990) allowed poor planners to verbalize and reflect on their actions in solving Progressive Matrices Tasks. The good planners were expected to utilize a similar planful behavior in solving the task spontaneously. Grade 4 children, who scored below

the median on the tests of Visual Search, and Trail Making were considered poor planners and those who were above the median were considered good planners . As expected, the poor planners' performance improved significantly under the verbalization condition, whereas the good planners did not show any significant improvement from the standard instruction condition to the verbalization condition. In another study Kar (1989) compared the top and bottom 15 students in grade 5 on a test of planning (Visual Search) on their performance in a Number Matching Task under a standard instruction condition and a verbalization condition. As expected, the verbalization condition improved the performance for both the groups from their respective standard instruction conditions, but the improvement was significantly better for the poor planners than the good planners. In both studies the authors argued that these results provided support for simple perceptual-motor planning tasks as reliable measures of planning, and as predictors of efficiency in the use of strategy.

D. Planning and Writing

The studies showing evidence of planning in writing have reported differences among the writers in terms of their idea generation, organization of text structures, and metacognitive knowledge. Only the studies that showed empirical evidence of these attributes are selected for discussion here. The time period was arbitrarily restricted to the last five years. Excluded are the "discussion papers", and those that involved "strategy instruction". It was observed that most researchers compared "normally achieving" students with "learning disabled (LD)" students to show the difference of a good writer from a poor writer. The LD students were usually selected from the special education services or resource room settings and defined as (a) intellectual ability in the average or above average range (b) achievement standard scores of at least 15 points below the predicted performance based on intelligence (c) absence of mental retardation, emotional

disturbance, behavior problem, and attention deficit disorder and (d) receptive or expressive language abilities below mental age expectations. The controversies surrounding the identification of LDs based on a discrepancy between predicted performance based on IQ and actual performance have been thoroughly discussed in a special issue of the Journal of Learning Disabilities with views from the two camps, one supporting the use of intelligence in defining LD (Torgesen, 1989) and the other disregarding its usefulness (Siegel, 1989). Thus the findings reported here may have to be interpreted cautiously. Additionally it is known that the studies that show no difference are usually not published and there is no way to find out if we have captured a complete picture of the role of planning in writing from the documented reports.

In a study Thomas, Englert, and Gregg (1987) compared the idea generation ability of poor and good writers on four types of text structures: description, sequence, comparison, and enumeration. In each text structure the dependent measures were five different kinds of error scores: irrelevancies, redundancies, early terminations, key words, and mechanical errors. The poor writers showed significant difficulties in four of the five type of errors, viz. redundancies, irrelevancies, early termination and mechanical errors in controlling the structure of the text. Certain types of errors were more prevalent than others for a particular type of text. For example, for key words comparison/contrast was most problematic, followed by sequence, and description. Description type text structure accounted for the most redundancies errors. Thomas et al. (1987) have interpreted these results in light of Bereiter and Scardamalias' (1986) proposition that poor writers tend to follow a "knowledge telling" strategy. They argued that at least five different characteristics can be identified from their findings to describe the writings of the poor writers: (1) lack of goal related planning, (2) excessive redundancies, (3) lack of interconnectedness in ideas, (4) reliance on random production of text, and (5) absence of revision.

In another study Englert and Thomas (1987) investigated sensitivity of text structures in recognition (reading) and production (writing) modes of students with learning difficulties. The results indicated that poor writers had the most difficulty with comparison/contrast type text and there was a significant relationship between reading and writing scores on each level of text structure. Englert and Thomas argued that since the recognition materials were one year below the reading level of the youngest LD subject, the text-structure difficulties can not be explained by lack of decoding skills. Instead, LD students' comprehension difficulties seemed attributable to their failure to apply appropriate metacognitive strategies involving text structure. The writing errors were related to number of elaborations generated by students, explanations of how particular steps of a process were performed, examples representing a given characteristic, and presence of relevant information. These characteristics reflect organizational and conceptual difficulties of poor writers rather than their skills in mechanics of writing.

Englert, Raphael, Fear, and Anderson (1988) examined LD students' (fourth and fifth grade) metacognitive knowledge about expository writing and the relationship between this knowledge and writing performance. The findings suggested that LD students were less aware of a number of attributes of writing than the high achieving students, which included modelled writing strategies, steps in the writing process, strategies for presenting expository ideas, and procedures for selecting and integrating information from multiple sources. Even when the LD students were guided through a strategy for organizing their ideas with the help of index cards, they failed to benefit to any substantial degree. Englert et al. have argued that unless strategies are explicitly labeled and taught to poor writers, they will not gain anything from a guided learning. The other critical finding of this study was that LD students depended on external cues such as length of paper, mechanical features, or indication from the teacher to determine if a writing assignment is finished. Good writers on the other hand used internal cues such as knowledge of the topic, or knowledge of text structure to terminate their writing. LD students were also different from

the Good writers in their knowledge about the organization of ideas. LD students displayed difficulties in analyzing text for organizational patterns that connect main ideas and minor ideas, labeling clusters of interdependent ideas, and using conceptual categories as a basis for generating new text. They were more dependent on isolated details or words to generate sentences instead. When the authors introduced multiple topics in more complex structures such as compare and contrast, good writers demonstrated strategies to keep two or more topics in mind. LD students, on the other hand, used a very rudimentary strategy of comparing one piece of idea with their own knowledge and lacked the ability to integrate two sets of ideas into a common text structure. Englert et al. concluded that alternative hypotheses such as lack of writing fluency, or inability to follow instruction etc. cannot account for the difference of the LDs and the non-LDs, because the LD students had the opportunity to dictate their responses, received individual assistance in producing writing samples, and were tested in small groups. Thus the evidence for the LD students' lack of knowledge of specific strategies and the necessary metacognitive knowledge to regulate strategy use in writing is compelling.

In a similar study, Englert, Raphael, Anderson, Gregg, and Anthony (1989) demonstrated LD students' lack of strategic awareness of text structure categories that facilitate idea generation and organization of ideas by comparing their performance in reading and writing in comparison/contrast and explanation type text structures. The metacognitive probes showed a relationship between the students' thoughts and knowledge about the writing process and their comprehension and production of text structures.

Wong, Wong, and Blenkinsop (1989) investigated the cognitive and metacognitive aspects of writing problem in LD adolescents (grade 8) in relation to their ability to write reportive and argumentative essays. Writings of the normally achieving eighth graders contained more coherent paragraphs, more correctly spelled words and were judged to be more interesting, clearer in communicating the goals, more suitable in choice of words, and better organized than the LD students. The data from the metacognitive interview indicated

that normally achieving students had a better understanding of what writing involves when compared with the LD students. They viewed writing as a means of self expression and satisfying activity and it involved a systematic plan: generating ideas, selecting the most relevant ones, and then organizing and elaborating them into the text of the essay. Good writers were reported to have visualized the shape and content of an essay in their heads before they actually started writing and the final product was always a revised and improved version of the initial ideas. On the other hand, the learning disabled children focused primarily on the mechanical aspects of writing such as spelling, punctuation, and neatness. They attributed their writing problems to difficulties in sentence production and spelling. Wong et al. reported some metacognitive awareness in LD students and described it as a "primitive knowledge telling strategy" following Scardamalia and Bereiter's (1987) conceptualization. Developmentally the 8th grade LD children were considered as similar to 6th grade normally achieving children in their cognitive and metacognitive processes of writing. The authors provided a speculative explanation for this developmental delay in terms of cumulative deficits in reading comprehension, reading strategies, and writing skills acquired in early grades.

More recently MacArthur, Graham, and Schwartz (1991) reported LD students' (grades 7 & 8) revising behavior by asking students to write and revise a text, and analyzing their responses to questions regarding revisions in general. The data indicated a difference in LD students' knowledge of revision, actual revision to their own text (stories and opinion essays), and revision to other's text. The main concept of revision was correction of errors, with 76% suggesting changes to mechanics, and 28% indicating substantive or content revisions. The substantive suggestions included adding information or a title, but no mention of organization, sentence structure, beginnings, or conclusions. When opinion was invited on some one else's text, 68% suggested mechanical corrections, and 76% made suggestions regarding substantive changes which included improvements to beginnings, reorganization, some deletion of details etc. However, when the LD students

were given their own text for revision, surface changes were more prevalent (56%), followed by minor word and phrase changes (22%). Only 19% of the changes had any effect on meaning, contributed primarily by T-unit revisions. From among all the changes, mechanical and substantive, only 45% of the changes were considered useful. From these findings MacArthur et al. concluded that teaching LD students to add contents may not be very difficult. On the other hand, LD students may be severely handicapped in their awareness in revision strategies such as reorganization, deleting irrelevant details, and improving beginnings and endings.

E. Summary and Plan of Action

In summary, the studies conducted in the last five years have quite substantially increased our knowledge about the critical differences in the writing processes of good and poor writers. Most of the studies have reported organizational deficiencies in the writings of the poor writers in addition to language related deficits such as mechanics (spelling, grammar, syntax etc.), and vocabulary. The organizational difficulties included communicating the goal, presenting minor ideas as parts of a main idea, deleting irrelevant details, and distinguishing beginnings and endings. The repetition of fragments of ideas, and irrelevancies in text are attributed to their inability to use conceptual categories. Some researchers believe that poor writers' concern over mechanical aspects of the language may be responsible for their tendency to overlook more important organizational aspects that control text structure. The studies on the metacognitive aspects of writing indicated that poor writers had very little awareness of the strategies used by the good writers. The poor writers did not seem to have an adequate knowledge of the steps in the writing process, procedures for selecting and integrating information, and strategies for presenting ideas in text. It was, however, interesting to see that poor writers were able to suggest revisions to some one else's composition in terms of organization, deletion, and sentence structure; whereas suggestions to their own composition primarily consisted of mechanical

corrections. This body of research has some potential in terms of providing remedial instruction to children experiencing difficulties with writing. At the same time the conceptions of planning viewed from a general cognitive paradigm may provide a different perspective to how the remedial instruction in writing can be most beneficial. The planning literature points to its application in two different frameworks, a general cognitive skill, and a context specific skill. The context specific model compares high achievers and low achievers on a content area such as reading or writing and implicates organizational difficulties of the low achievers strictly in that context. On the other hand, the general cognitive model expects planning to affect a wide range of activities. De Lisi (1987) proposed four types of plans to explain how mental representation of a task differentiates itself from the task progressively from a Type 1 plan to Type 4 plan. He claims that at the stage of Type 3 plan it is possible to engage in a variety of activities such as use of notes, lists, computations, or consultations that are completely detached from the primary task, yet determine how the task is produced. Using this type of conceptualization of planning we can possibly explain the quality of writing of the poor writers. The inability to form and modify a mental representation of a task typifies the problem poor writers face in generating ideas, structuring them, and presenting them in a standardized format. Hays-Roth and Hays-Roth's model provides us a complex structure of planning to explain how an expert planner might execute his or her task. These authors have conceptualized distinct units for execution of a particular function that guides, overrides if necessary, and modifies actions by monitoring resources and goal. These ideas can be translated into writing instruction if we can show that poor writers' organizational deficits in writing are initially a function of general planning and problem solving difficulties. To verify this assumption the PASS model provides us with a set of tools to measure the planning process objectively in a context, free from our target measure, which is writing. Convincing evidence has been presented to provide validity for the planning tasks that are part of an approach which assumes four basic processes (simultaneous, successive, attention, and planning)

underlying most cognitive functions. This position is relevant in the search for an academic-content-free skill assumed to affect all other activities. With this background, this study was designed to demonstrate (a) a content specific deficit in planning for poor writers, and (b) a content free cognitive deficit in planning for poor writers and possibly the basis for their impairments in (a). To achieve these goals two studies were conducted. In one study, a group of poor writers identified by a test of written language and teacher's ratings was compared with a group of good writers on various aspects of writing processes reflecting planning and organization. The other study compared the good writers with the poor writers on three cognitive tests of planning from the PASS battery. Finally, a model was tested to show that skills representing general planning affect more specialized planning and organization in writing, which determines the overall quality of written composition.

CHAPTER III

DEFINITIONS, HYPOTHESES, AND RATIONALE

Definitions:

Expressive Written Language: Hammill and Larsen (1988) define written language as "the comprehension and expression of thought through the use of characters, letters, or words that are etched, traced, or formed on the surface of some material." The comprehension aspect of the definition relates to the receptive forms of the written language, i.e. reading. On the other hand, the expressive forms of the written language is "writing". The Test of Written Language (TOWL), described in detail in Chapter IV, is a measure of this expressive form of written language. The definition provided by Hammill and Larsen is endorsed on the basis of three logistics. First, it is an acceptable description of the process in a field where there is hardly any agreement as to what constitutes writing. Different forms of language seem to lose their distinct identities at certain points (Horowitz and Samuels, 1987). The oral and written language seem to share that boundary. For example, one might argue that recording a speech on an audio tape can be considered "writing", because the audio version can be typed on a piece of paper to resemble the traditional concept of writing. Second, it is an operational definition as opposed to a conceptual definition. Conceptual definitions deal with issues that are beyond the scope of this work. They are an area of research and debate on their own, although we will touch that issue briefly in the concluding chapter. Third, we have used the Test of Written Language as a criterion measure in this study. Therefore, it is logical to provide the definition that has guided the test development, providing content validity.

Good Writers: As will be described in Chapter IV, the Test of Written Language produces scores on five scales for a spontaneous writing task. The selection of "good writers" was made on the following basis: The scores of each child on Thematic Maturity, Contextual Vocabulary, Syntactic Maturity, Contextual Spelling, and Contextual Style were

converted to standard scores and the sum of the standard scores on these five subtests were converted to a Spontaneous Writing Quotient according to the tables provided in the manual of the Test of Written Language. Subjects who were within the top 30% of the sample of 107 children in this study on the Writing-Quotient were designated as "good writers". With a Quotient of 115 and more, these writers were in the range of "above average" and better.

Poor Writers: The subjects who were within the bottom 30% of the sample on the Writing-Quotient were designated as "poor writers". With a Quotient of 97 and less, these writers were in the "low-average" range and below.

Statement of Hypotheses

Hypothesis 1: Performance of the Good Writers will be better on the Planned Composition and Planning tasks than the poor writers.

Hypothesis 1a: The Good Writers will perform significantly better on all the planning tasks (Planned Codes, Planned Connections, and Matching Numbers) given to the subjects from the Cognitive Assessment System (CAS) (Das & Naglieri, 1989) than the Poor Writers. On a composite score of these tests, the Good Writers will also do better than the Poor Writers.

Hypothesis 1b: The good writers, as defined above, will be significantly better on the Planned Composition variables (expression, organization, wording, mechanics, and individuality) than the poor writers.

Hypothesis 2: Writing, represented by the Quotient of the Test of Written Language, will be related to Planning and Planned Composition.

Hypothesis 2a: Scores on the Writing test will be significantly related to the scores on the Planning tasks.

Hypothesis 2b: Scores on Writing test will be significantly related to the Planned Composition variables. The correlation coefficients in this case should be higher than the magnitude of correlation in hypothesis 2a.

Hypothesis 2c: Planned composition will be significantly related to planning.

Hypothesis 3: The pattern of inter-correlations among Writing, Planning, and Planned Composition variables will not be the same for the Good Writers and the Poor Writers as defined above, when both groups are matched on intelligence.

Hypothesis 3a: The relationship between Planning and Writing may be significant only for the Good Writers and not for the Poor Writers.

Hypothesis 3b: Planning may be related to the planned composition variables only for the Poor Writers.

Hypothesis 3c: Writing may be related to the linguistic (mechanics, spelling etc.) aspects of the composition for the Poor Writers and originality and style aspects of the composition for the Good Writers.

Hypothesis 4: Performance in the global planning (defined by the tasks chosen) will influence Planned Composition (planning in writing), and performance in Planned Composition will influence writing. Therefore in a Linear Structural Relationship, a path should be indicated from Planning to Planned Composition, and another path should

be indicated from Planned Composition to Writing. A path from Planning directly to Writing may exist, but probably will be very weak in its magnitude.

Hypothesis 5: Good Writers (defined by TOWL) will be able to write good reflective essays, indicated by a holistic rating, and provide evidence for organization and planning, compared to the Poor Writers.

Hypothesis 5a: The Good Writers may take more time and write longer essays (more words) than the Poor Writers. The Good Writers will take notes to organize and plan for their main essay. Poor Writers, in comparison, may not engage in such activities, and the quality of their note taking, if present, may indicate very little evidence for planning and organization.

Hypothesis 5b: The thinking aloud protocols of the good writers may be different from the poor writers in several ways. The good writers may provide evidence for, an elaborate interpretation of the questions, consideration of an audience, knowledge that distinguishes good writing from poor writing, and self evaluation based on their writing experiences.

Rationale for the Hypotheses

Hypothesis 1: The previous chapter has shown that Planning and Organization are central to most theories of writing. Even though it is not known how expert writers are able to plan the way they do, most likely good writers will do better on a general cognitive test of planning and to a greater degree on Planned Composition, where planning is utilized in the context of writing, than the poor writers, who may be less efficient in planning.

Hypothesis 2: As a corollary of hypothesis 1, we would expect planning and planned composition to be related to writing. However, because of contextual similarity, writing and planned composition may have a higher correlation than the correlation of writing with planning. Additionally, Writing and Planned Composition share some common elements in scoring, which may contribute to some correlation between them.

Hypothesis 3: In the information processing model of Das and Naglieri (1990), described before, difficulties in the planning unit can result in disruption of many higher cognitive functions that require solving problems, self monitoring, and generating new questions. Intelligence, defined as a "g" factor, can also influence these cognitive functions. Therefore, a moderate relationship between intelligence and planning can be found. So when intelligence is held constant, it may not be unlikely to see the effects of planning removed partially or completely. For the poor writers, the planning scores may be low and less variable. Consequently, the correlations of planning and writing may also be low or negligible. On the other hand, good writers may show a greater variability in planning and a relatively greater correlation between writing and planning compared to the poor writers.

For the poor writers, writing is likely to be influenced by the grammar, spelling etc., possibly because of their preoccupation and concern with the surface structure of the language. For the good writers, since these basic aspects of writing are usually mastered already, individuality and originality etc. are more likely to influence how they write.

Hypothesis 4: Planning being a complex construct, it needs to be conceptualized and measured in a more general way and then in a specific way in a particular context. These two approaches are likely related. Thus, tests that measure global planning (general) are likely to determine utilization of planning in the context of writing (specific), assessed by the planned composition. Since planned composition is only a subset of the overall

writing behavior, performance in planned composition may contribute to the competency in the test of written language. Thus the relationship of planning and writing is most likely mediated through planned composition.

Hypothesis 5: In a thinking aloud protocol, any evidence of planning and organization is likely to be less for the poor writers than the good writers, because of the assumption, as stated before that poor writers are also poor planners compared to the good writers. Thus note-taking, spending more time, writing longer essays, making more elaborate interpretations, considering an audience for their essays, recognizing what they know about a topic, and providing an overall structure to the text etc. are expected to be different for the good and poor writers, with more evidence of planning and organization for the good writers.

CHAPTER IV

STUDY 1 : METHOD AND RESULTS

Method

Subjects

The principals and teachers of two schools of the Separate School Board of Edmonton consented to allow their students to be tested. All of the regular Grade 8 classes were chosen with a total enrollment of about 150 students. Teachers in each school distributed the consent forms to their students. The consent form described the project briefly and requested the parents to allow their children to participate in the study (see Appendix A). A total of 108 students obtained parental permission. However, one student did not want to take any test and was excused from the study. The remaining students consisted of 48 boys and 59 girls with a Mean age of 13.9 years and SD of 0.5 years. The Means and Standard Deviations of age for boys, girls, and the total group in the two schools are presented in Table 1. The two participating schools drew pupils from a cross-section of socioeconomic areas from relatively low-middle to upper middle class, as reported by the school board officials and the school principals. English was the first language of all the students and no one was receiving resource room help in any academic areas during the 1989/90 school year. Also no one was reported to have any known organic (epilepsy, brain injury etc.) or emotional disorder. The decision to take grade 8 students for this study was influenced by Bereiter and Scardamalia's (1987) finding that children at this age demonstrate observable behavior reflecting planning in their think-aloud protocols and notes to organize story writing.

Procedure

The Language Arts teachers in each participating school were initially explained the nature and objectives of the project and their role in various stages of the study. The

Table 1

Means and Standard Deviations of Age in Years for Boys and Girls in the Two Schools

	BOYS			GIRLS			ROW TOTAL		
School	Mean	SD	N	Mean	SD	N	Mean	SD	N
School-1	13.840	.337	24	13.880	.332	30	13.862	.331	54
School-2	14.091	.542	24	13.874	.641	29	13.970	.603	53
Column Total	13.963	.461	48	13.877	.503	59	13.915	.485	107

teachers helped to administer the Spontaneous Writing part of the Test of Written Language-2 (TOWL-2) (Hammill & Larsen, 1988). This involved distributing a Student Response Booklet which had a picture in it on the second page. The front page was used for writing the name of the student and name of the school. The teachers read the instruction to their students and allowed 15 minutes to write a story about the picture, following the guide line provided in the TOWL. After the specified time, the booklets were collected and handed over to the writer. The individual testing involved three tests from the Planning Battery of the Cognitive Assessment System (Das & Naglieri, 1989): Planned Codes, Planned Connections, and Matching Numbers. Each student was tested by the writer individually in a relatively quiet room provided by the schools specifically for this study. The scores on Canadian Test of Basic Skills (CTBS) administered in February, 1990 and Canadian Cognitive Ability Test (CCAT) administered in October, 1990 by the Separate School Board of Edmonton, were obtained from the School file. The Language Arts teachers were requested to provide a rating of their students' writing skill on a seven point scale, "one" representing very poor and "seven" representing very superior (see Appendix B for the rating instructions for teachers). At the end of the school year the teachers also provided the scores of each student on their performance in Language Arts on a scale of 0 to 100.

Description of the Tests

1. Test of Written Language-2 (TOWL-2):

Test of Written Language, originally published in 1978, was revised once in 1983 and again in 1988 (Hammill & Larsen, 1988). TOWL-2 has two components: the Contrived Writing, and the Spontaneous Writing. The contrived writing tests focus on the evaluation of vocabulary, spelling, capitalization, punctuation, and word usage in isolation, ignoring the overall quality of the written message. On the other hand, spontaneous writing focuses on evaluating samples of spontaneously written products for thematic maturity, contextual

vocabulary, syntactic maturity, contextual spelling, and contextual style. Each component provides a composite score from their respective subtest scores. Since the interest in this research was on written composition, only the spontaneous writing part of the test was selected for administration. Accordingly, the subjects were asked to write a story in response to the stimulus picture of the spontaneous writing-Form B and then the composition was scored for the five different elements described above. The raw scores of each of these five subtests were converted to a scaled score with a Mean of 10 and Standard Deviation of 3. Then the sum of the scaled scores was converted to a "Writing Quotient" with a Mean of 100, and Standard Deviation of 15. All the conversion tables are provided in the TOWL-2 manual.

Three types of reliabilities and three types of validities are reported in the TOWL-2 manual. The interscorer reliability among the subtests ranged from .92 to .99. The internal consistency coefficients for the composites were equally high and above .90 for ages seven to seventeen. However, the subtest internal consistency coefficients were somewhat lower with a range of .74 to .95 for Form-B. Similarly, the test-retest reliabilities are better for the composite scores with a range of .78 to .85, than the subtests with a range of .61 to .77. Therefore, some caution is advised in interpreting the subtest scores (see page 71 of the manual). The three types of validity reported are content validity, criterion-related validity, and construct validity. The authors of TOWL-2 have claimed that the theoretical rationale, justifications for the decisions made about the content, and the item analyses are all evidence for adequate content validity. Criterion validity has been reported on the basis of a correlation of .62 with Language Arts Scores of SRA Achievement Series and .61 with the holistic ratings. Construct validity of TOWL-2 has been thoroughly addressed by consideration of eight basic criteria: 1) the abilities are developmental in nature, 2) subtests and composites should be related, 3) average and poor writers should be able to be differentiated, 4) scores should correlate with grade level, 5) items of each subtest should relate highly to the total score of the subtest, 6) should correlate with other academic

subjects, 7) scores should be related to IQ, and 8) factor analysis should yield factor scores consistent with the underlying model. Evidence for all these criteria are documented in the manual with satisfactory results.

A review of this test published recently concluded that "The TOWL-2 appears to be one of the best measures of written language available to clinical practitioners. Standardization was well done.....reliability and validity seem adequate." (Davis, 1990, p. 188). According to Davis the limitations of TOWL-2 are (a) lengthy administration time (b) difficulty level may be high for second- and third-graders and (c) minority groups may not be well represented by the norming group. Since, in the present study (a) only the spontaneous writing part is used, (b) subjects are in grade eight, and (c) English is the first language for all the students, the test was expected to have appropriate utility. The Cronbach's Alpha reliability for this sample of 107 children was found to be .78.

2. Tests of Planning:

Three tests of planning were taken from the Planning Battery of the Tryout Edition of the Cognitive Assessment System (Das & Naglieri, 1989). The tests are Planned Codes, Planned Connections, and Matching Numbers. A brief description of the tests follows.

(a) Planned Codes: This task consists of two items (pages) in which the child's task is to code a series of boxes marked with the letters A, B, C, or D using proper sequence of X's and O's (i.e., A=OX, B=XX, etc.). Each item of the test has different codes and different arrangements of response locations. Subjects are asked to code the boxes as quickly as possible using an efficient strategy. An efficient method often used is to code item 1 for A's in the first column, B's in the second column etc., or code both A columns, then both B columns etc. For item 2, however, the most effective strategy would be to code diagonally, A's and B's in pairs or one letter at a time. Sometimes, a subject may discover an efficient way for one item and try to use the same for the second item and find that it is more time consuming. So, a better planner may change strategies efficiently from item to

item that takes the least time to complete the task.

(b) Planned Connections: This test requires the subjects to develop some effective way of connecting sequential stimuli (e.g. the numbers 1-2-3-4-5), which appear in a diverse manner on a page. The first two items require the child to connect a series of numbers in their proper sequence (1 to 2, 2 to 3 etc.). The last two items require the subject to connect numbers and letters alternatively in their proper sequence (1 to A, A to 2, 2 to B, B to 3, and so on). The first part of the test is designated as Planned Connections-Numbers Only, and the second part of the test is designated as Planned Connections-Numbers and Letters. Some of the strategies used in a task like this involve scanning the page for the next number or letter, looking back to the last number or letter to know what comes next, looking at only a portion of the page that is most likely to have the next number or letter first, and repeating the alphabet/number series aloud as the task is completed. The best measure of the degree of efficiency of connecting these points is the time needed to complete the sequence; therefore the test score is the total amount of time in seconds used to complete all the items.

(c) Matching Numbers: This task requires the subject to find and underline the two numbers that are the same from a row of six numbers using a strategy that would require the least time. This three item (page) test has eight rows on each page and arranged with numbers containing 2 to 3 digits for item 1, 5 digits for item 2, and 7 digits for item 3. Strategies that take the minimum time include, matching the first, then the second until the match is found; matching the first or last two, then the next two etc. until the match is found; or matching the first, then the last and then the middle to find the pair.

All the tasks required the subjects to use a strategy that takes the minimum time and report it after completing each item. The use of a strategy (or strategies) observed, and reported by the subjects were reported in the Record Form (see Appendix C). The purpose of asking the subjects to use a strategy was to (a) ensure that the task is carried out with a plan, (b) check if relevant effort was employed in the task, and (c) analyze the individual

difference in strategy use if necessary (was not done for this study). Thus, the tests assumed to measure the efficiency of a strategy or plan rather than measure simple motor speed of executing the task.

The reliability and validity data on the CAS published so far has enough evidence to support the theoretical basis of the test battery on which it is based and document its usefulness in educational and psychological practice. The 1989 version CAS tests have undergone extensive test development over several years and replications of factor analytic procedures have verified the relative independence of the underlying cognitive processes of Planning, Attention, Simultaneous, and Successive processes proposed initially by Luria (Lambert, 1990). Recent studies on the CAS demonstrating different types of validity have been reported in several sources (Naglieri & Das, 1990; Naglieri, Das, & Jarman, 1990). Planning, in particular, has been documented as a separate factor distinct from simultaneous and successive coding in a number of studies (Ashman & Das, 1980; Das, 1984; Das & Dash, 1983; Das & Heemsbergen, 1983; Garofalo, 1986; Leong, Cheng, & Das, 1985; Naglieri, Braden, & Warrick, 1992; Naglieri, Das, Stevens, & Ledbetter, 1991; Naglieri, Prewett, & Bardos, 1989). It has been shown that simple tasks such as trail making (similar to the planned connections described above), and visual search (pointing to a picture, number, or letter located in a field around the target) to correlate with complex tasks such as written composition of a story (Ashman & Das, 1980; Das & Heemsbergen, 1983); speed of solving syllogistic reasoning tasks (Das & Heemsbergen, 1983); the Wisconsin Card Sorting task (Garofalo, 1986); and a pictorial category task (Schofield & Ashman, 1986).

Since the tests selected for this study were less complex than some other planning tasks, it was expected that difficult items of some of the subtests might represent a slightly higher level planning than the rest of the tests combined. Therefore, two composite scores were derived from the scores of all the planning tasks: Planning-A representing all the items of all the tests, and Planning-B representing the last two items of Planned Connections and

Matching Numbers. The Cronbach's Alpha reliability for this sample of 107 children was found to be .83 for Planning-A, and .72 for Planning-B based on the score of time taken to complete each task in seconds.

3. Planned Composition (PC):

An examination of the tests of planning described above reveal that they are not specific to writing activity, even though a good planner is expected to be good at this lower level planning. Luria (1973) has observed planning deficiencies in patients with frontal lobe disorders, who describe events incoherently and Christensen (1974) found similar effects, involving an inability to maintain an overall plan in writing. So it was assumed that a short composition should reflect deficiencies in planning as well. Diederich (1974) perfected this notion by identifying five dimensions of writing in a factor analytic study. Subsequently, Ashman (1978) adapted Diedrich's scoring system to examine planning differences among grade 8 children. He employed a seven point Likert-type scale and asked raters to evaluate Expression (thought given to the topic and ability to express), Organization (underlying plan and logical sequence of material), Wording (correct and imaginative use of words), Mechanics (sentence structure, spelling, and punctuation), and Individuality (creative and original composition of ideas). It was felt that evaluation on this scale would give a more specific estimate of one's planning ability as applied to writing. Ashman (1978) used Card 2 of the Thematic Apperception Test as a stimulus card and asked the students to write a one-page story. In this study, however, a composition was already obtained in a similar way from a stimulus picture of the Test of Written Language described before. So, the same story was taken and rescored by the rating scale developed by Ashman (see Appendix D). It was also believed that such a procedure might help compare the Planned Composition scores with the Test of Written Language Scores.

The factor analytic studies have shown Planned Composition to load on a planning factor with other tests of planning (Ashman, 1978; Das, 1984; Das, Naglieri, & Kirby, in

press). The Cronbach Alpha reliability over the five dimensions of the Planned Composition Ratings for the 107 children of this study was found to be .914. Reliability estimate for each scale is not available.

4. Canadian Cognitive Ability Test (CCAT):

Because it seemed reasonable to expect that intelligence may be a confounding variable in planning as well as writing competency, the Verbal, Quantitative, and Nonverbal scores on Canadian Cognitive Abilities Test, Form 3 (Thorndike, Hagen, & Wright, 1982) were collected. It may be pointed out, however, that these tests were given by the Separate School Board for their routine evaluation during the same school year (1989/90), when the other tests mentioned above were given for this study.

The Kuder-Richardson Formula #20 reliability estimates reported in the technical manual (page 19) for the verbal battery is .92, quantitative battery is .89, and nonverbal battery is .90. Two types of validity estimates for CCAT are reported: content validity, and criterion-related validity. The operational definitions of constructs and the process of item selection provided content validation for the test. The criterion validity was estimated by the correlation coefficients of CCAT scores with Canadian Test of Basic Skills (CTBS). With the exception of mathematics tests of CTBS, all other tests correlated in the mid .80's with verbal battery of the CCAT. The quantitative battery correlated in the mid .70's, and the nonverbal battery correlated in the low .60's with CTBS tests, thus providing acceptable criterion validity (Cummings, 1989).

5. Canadian Test of Basic Skills (CTBS):

Scores on vocabulary, reading comprehension, mathematics concepts, and mathematics problem solving of the CTBS-Multilevel Edition (King, Hieronymus, Lindquist, Hoover, & Scannell, 1982), administered in October 1990, were obtained from the school on all students participating in this study.

The reliability and validity issues of CTBS have been very extensibly dealt with in

the manual. The internal consistency (K-R 20) reliabilities for subtests of CTBS ranged from .64 to .93. The evidence for predictive validity is addressed by providing correlations of .53 to .76 between CTBS subtest scores and year-end course grades of ninth-grade students. In a test critique Gallivan (1985) concluded that "Overall, the strengths of the tests outweigh the deficiencies and make the Canadian Tests of Basic Skills a welcome contribution to educational assessment for Canadians." (page 130-131)

Results and Discussion

Comparison of Good and Poor Writers:

To test Hypothesis 1, first the top and bottom 30% of the children on the total score on TOWL-2 were designated as Good Writers and Poor Writers respectively. When compared with the normative group, the group with lower scores on writing, fell below the low-average range (quotient of 97 and below), and the group with higher scores on writing fell above the mid point for above average range (quotient of 115 and above). With a sample size of 33 for the Poor Writer group and 34 for the Good Writer group, it was believed that group comparison would yield meaningful results. The dividing criteria for the group formation may appear somewhat arbitrary, but it was not possible otherwise to be consistent with the normative classification and maintain a sizable number in each group for other statistical operations.

Results of Multivariate Analysis of Variance (MANOVA) performed on the planning tests and the total planning scores with Means and SDs are presented in Table 2. Scores on each subtest were first converted to a Standard Score (linear transformation) with a mean of 100 and standard deviation of 15 over all the subjects (n=107). Then Means and SDs were found on each subtest for each group of writers. The purpose of the transformation was to compute a total score for the Planning Tests. Since time measured in seconds was the score for all the planning tasks, a lower score represented better planning

Table 2

Multivariate Analysis of Variance of Planning Tasks by Poor and Good Writers

Test	F	DF	Sig. of F
Wilk's Lambda	5.488	4, 64	.006

Univariate F-Tests (DF=1, 65)

Tests	Group	Mean	SD	MS error	F Value
Planning-A (all tests)	Poor writer	103.146	10.006	77.812	8.308**
	Good writer	96.933	7.495		
Planning-B (harder tests)	Poor writer	104.506	12.455	103.689	11.141**
	Good writers	96.201	7.335		

Test	F	DF	Sig. of F
Wilk's Lambda	5.616	4, 62	.001

Univariate F-Tests (DF=1, 65)

Tests	Group	Mean	SD	MS error	F Value
Planned Code	Poor writer	102.989	10.837	153.367	4.727*
	Good writer	96.409	13.719		
Planned Connections - Numbers	Poor writer	100.005	14.210	195.428	0.005
	Good writer	99.756	13.753		
Planned Connections - Numbers & Letters	Poor writer	104.888	16.944	175.061	7.754**
	Good writer	95.884	8.149		
Matching Numbers	Poor writer	104.183	12.941	123.579	8.858**
	Good writer	96.098	9.001		

Poor writers: N=33
Good writers: N=34
* $p < .05$
** $p < .01$

ability. Results indicated that Good Writers had significantly lower scores on Planning-A (all tests), $F(1, 65)=8.308$, $p < .01$, and on Planning-B (harder tests), $F(1, 65)=11.141$, $p < .01$, than the Poor Writers. At the subtest level, Poor Writers were found to have significantly higher scores on Planned Connections-numbers & letters, $F(1, 65)=7.754$, $p < .01$, Matching Numbers, $F(1, 65)= 8.858$, $p < .01$, and Planned Codes, $F(1, 65)=4.727$, $p < .05$, than the Good Writers. The only subtest that did not discriminate Good Writers from the Poor Writers was Planned Connections-Numbers, $F < 1$ (see Table 2). Except for this subtest, these findings support the hypothesis that Good Writers perform better than the Poor Writers in the cognitive tests of planning. In a study reported earlier Ashman (1978) had found that Good Planners, defined on the basis of cognitive tests of planning from PASS, scored significantly higher on a written passage scored for organizational and mechanical aspects of writing. Consequently it is logical to expect Good Writers to perform better on cognitive tests of planning than the Poor Writers. The Cognitive tests of planning are measures of skills in low level problem solving and strategy use. A poor performance in this ability is expected to impair performance in activities that require higher level or more complex planning and organization that are usually expected in good writing.

It may be noted here that the definition of a Good Writer in this study was based on the performance in TOWL-2, which was different from Ashman's method of scoring. Ashman was interested in assessing the use of planning in writing in his Planned Composition Test. So, the passage obtained from the TOWL-2 was rescored using Ashman's method to see if Good Writers performed better than the Poor Writers on the five variables of the Planned Composition. The results of a MANOVA on Planned Composition Variables with the Means and SDs are reported in Table 3. A rating of 'one' on these variables indicated very superior and a rating of 'seven' indicated very poor ability. Thus, a lower score reflects greater efficiency on any particular Planned Composition variables. It was found that Good Writers were significantly more efficient in

Table 3

Multivariate Analysis of Variance of Planned Composition Variables for Poor and Good Writers

Test	F	DF	Sig. of F
Wilk's Lambda	8.515	5, 61	.000

Univariate F-Tests (DF=1, 65)

Tests	Group	Mean	SD	MS error	F
Expression	Poor Writer	3.939	0.998	1.140	26.813**
	Good Writer	2.588	1.131		
Organization	Poor Writer	4.424	1.146	1.617	30.576**
	Good Writer	2.706	1.382		
Wording	Poor writer	4.061	0.864	1.200	23.437**
	Good Writer	2.765	1.281		
Mechanics	Poor Writer	4.152	1.004	1.363	31.156**
	Good Writer	2.559	1.307		
Individuality	Poor Writer	3.636	1.410	1.817	11.293**
	Good Writer	2.529	1.285		

Poor Writers: N=33
Good Writers: N=34
** $p < .01$

Expression, $F(1, 65)=26.813$, $p < .01$, Organization, $F(1, 65)=30.576$, $p < .01$, Wording, $F(1, 65)=23.437$, $p < .01$, Mechanics, $F(1, 65)=31.156$, $p < .01$, and Individuality, $F(1, 65)=11.293$, $p < .01$ than the Poor Writers. Thus support for Hypothesis 1b was obtained. These results are consistent with the findings of Thomas et al. (1987), and Wong et al. (1989) in demonstrating difficulties of Poor Writers in mechanical (spelling, grammar etc.) and organizational aspects of writing. We have demonstrated before that the Good Writers are also good planners. Thus they demonstrate relatively superior abilities in the use of planning and organization in the context of writing, assessed by Planned Composition, and in nonverbal problem solving skills, assessed by the Planning Tasks.

Comparison of Groups with Intelligence as a Covariate:

Intelligence has been implicated both in Planning (Naglieri, Das, & Jarman, 1990) and in Writing (Hammill & Larsen, 1988). Even though, these three constructs are relatively independent, at a certain critical level, one or more of these variables may show greater degree of relationship than below that value. It was necessary to check the effect of intelligence on the group differences reported above before a critical level hypothesis can be proposed. Therefore, the next level of analysis involved Multivariate Analysis of Covariance for the tests of Planning and Planned Composition for the Good and Poor Writers, where verbal score from the Canadian Cognitive Abilities Test (CCAT) served as an indicator of intelligence. Since the verbal scores of CCAT provided the best prediction of vocabulary, reading, and language skills (Thorndike & Hagen, 1984), writing scores were believed to be most affected by verbal Intelligence.

The results of MANCOVA presented in Table 4 indicated that when verbal intelligence score was used as a covariate most of the group difference reported before vanished. However, Matching Numbers continued to significantly discriminate Good Writers from the Poor Writers, $F(1, 56)=4.123$, $p < .05$. Also, Planning-B (harder tests) was almost significant, $F(1, 56)=3.484$, $p=.067$.

Table 4

Multivariate Analysis of Covariance for the Tests of Planning by Poor Writers and Good Writers with Verbal Intelligence as a Covariate

Test	F	DF	Sig. of F
Wilk's Lambda	3.300	4, 53	.017

Univariate F-Tests (DF=1, 56)

Tests	Group	Adj. Mean	MS error	F
Planned Code	Poor Writer	103.326	165.043	2.448
	Good Writer	97.266		
Planned Connections - Numbers	Poor Writer	99.125	192.987	0.438
	Good Writer	101.895		
Planned Connections - Numbers & Letters	Poor Writer	102.583	178.995	1.447
	Good Writer	97.732		
Matching Numbers	Poor Writer	103.757	136.870	4.123*
	Good Writer	96.596		

Test	F	DF	Sig. of F
Wilk's Lambda	1.714	2, 55	.190

Univariate F-Tests (DF=1, 56)

Tests	Group	Adj. Mean	MS error	F
Planning-A	Poor Writer	102.371	81.486	2.377
	Good Writer	98.175		
Planning-B (harder tests)	Poor Writer	103.095	108.676	3.484†
	Good Writer	97.230		

* $p < .05$
† $p=.067$

Similarly, a MANCOVA was performed on the Planned Composition variables and reported in Table 5. It was found that Expression, $F(1, 56)=5.958$, $p < .05$, Organization, $F(1, 56)=14.505$, $p < .01$, Wording, $F(1, 56)=6.177$, $p < .05$, and Mechanics, $F(1, 56)= 10.465$, $p < .01$, significantly differentiated the good writers from the poor writers. The only variable that did not do so was Individuality, $F(1, 56)=1.417$, $p > .05$.

The Adjusted Mean Scores in Table 4 and Table 5 indicated that the Good Writers were consistently better than the Poor Writers on Matching Numbers, Expression, Organization, Wording, and Mechanics even when effect of Verbal Intelligence was removed by holding it as a covariate. However, it was observed that planning tasks were much more affected by the verbal intelligence covariate than the planned composition variables. It has been shown in the next section that, the covariate has about the same magnitude of correlation with planning as well as planned composition. Possibly, intelligence scores are more likely to affect a skill which is more general than a skill which is more specific. Since planning tasks are more removed from writing than the planned composition in terms of its context, it is more susceptible to the effects of intelligence scores, which reflects a general cognitive ability. If however, planning tasks are argued to measure planning and not intelligence, then the correlation between them should not be very high. This proposition is therefore tested in the next section.

Relationships Among the Variables:

A correlation matrix of the important measures are presented in Table 6 and Table 7. Table 6 reports the Planning, Writing, and Planned Composition variables, where as Table 7 reports variables from Canadian Test of Basic Skills (CTBS), Canadian Cognitive Abilities Test (CCAT), Teacher's Rating, School Performance, and a Composite Score derived from the Planned Composition variables.

Hypothesis 2 was tested from the correlation coefficients of Writing with Planning and Planned Composition (see Table 6). The correlation of Writing with Planning-A (all

Table 5

Multivariate Analysis of Covariance for the Planned Composition Variables for Poor and Good Writers with Verbal Intelligence as a Covariate

Test	F	DF	Sig. of F
Wilk's Lambda	4.128	5, 52	.003

Univariate F-Tests (DF=1, 56)

Tests	Group	Adj. Mean	MS error	F
Expression	Poor Writer	3.582	0.881	5.958*
	Good Writer	2.891		
Organization	Poor Writer	4.208	1.297	14.505**
	Good Writer	2.901		
Wording	Poor Writer	3.790	1.150	6.177*
	Good Writer	2.987		
Mechanics	Poor Writer	3.852	1.151	10.465**
	Good Writer	2.806		
Individuality	Poor Writer	3.273	1.361	1.417
	Good Writer	2.854		

* $p < .05$
** $p < .01$

Table 6

Correlations for Writing, Planning, and Planned Composition Variables

Variables	Planning-A	Planning-B	Expression	Organization	Wording	Mechanics	Individuality	Pl. Comp.
Writing	-.195*	-.240**	-.472**	-.520**	-.420**	-.450**	-.389**	-.519**
Planning-A (all tests)		.879**	.237**	.185*	.291**	.316**	.105	.262**
Planning-B (harder tests)			.255**	.207*	.300**	.340**	.109	.279**
Expression				.860**	.755**	.651**	.740**	.923**
Organization					.707**	.589**	.776**	.906**
Wording						.773**	.654**	.896**
Mechanics							.405**	.788**
Individuality								.824**
Planned Composition-Total								

N=107
* $p < .05$
** $p < .01$

Table 7

Correlations for Writing, Planning, CTBS, CCAT, Teacher's Ratings and School Performance

Variables	PlanningA	PlanningB	Vocab.	Compre.	Verbal	Quantitative	N-Verbal	T.Ratings	Performance	Pl.Comp.
Writing	-.195*	-.240**	.218*	.412**	.468**	.379**	.302**	.407**	.414**	-.519**
Planning-A (all tests)		.879**	-.045	-.154	-.272**	-.460**	-.427**	-.264**	-.217*	.262 **
Planning-B (harder tests)			-.010	-.176*	-.250**	-.450**	-.429**	-.214*	-.167*	.279**
Vocabulary (CTBS)				.695**	.803**	.441**	.501**	.639**	.512**	-.441**
Comprehension (CTBS)					.698**	.626**	.522**	.634**	.552**	-.495**
IQ-Verbal						.578**	.574**	.716**	.592**	-.540**
IQ-Quantitative							.666**	.535**	.504**	-.360**
IQ-Nonverbal								.475**	.413**	-.335**
Teacher's Rating									.741**	-.529**
Performance in Language Arts										-.304**

N=107
* $p < .05$
** $p < .01$

tests) was -.195 ($p < .05$) and Planning-B (harder tests) was -.240 ($p < .01$). The correlation of writing with the total score of Planned Composition was -.519 ($p < .01$). The correlation of Planned Composition with Planning-A was .262 ($p < .01$), and Planning-B was .279 ($p < .01$). The minus sign is due to the scoring procedure utilized for Planning and Planned Composition; a lower score indicated greater efficiency on both these tests. On the other hand, for the Writing test, a higher score indicated better writing. A number of interesting observations can be made from the correlations reported above. As expected the magnitude of correlation of Writing with basic or lower level Planning was smaller than the magnitude of correlation of Writing with Planned Composition, a task scored for planning components in writing directly. It was also found that Writing and Planned Composition had higher correlations with the harder tests of planning (Planning-B), than the lower level planning (the Planning-A). All correlations were significant but somewhat low. Nevertheless, the overall pattern was consistent with our hypothesis that writing scores will have a significant and higher relationship with planned composition than planning tasks. Subsequently, this notion will be demonstrated in a path diagram.

A few interesting observations can be made from Table 7. Both Planning-A (all tests) and Planning-B (harder tests) had slightly higher correlations with Quantitative (-.460 & -.450) and Nonverbal (-.427 & -.429) Intelligence than Verbal Intelligence (-.272 & -.250). However, these values were no greater than the correlation coefficients of Writing with Quantitative (.379), Nonverbal (.302), and Verbal (.468) Intelligence; or the correlations of Planned Composition with Quantitative (-.360), Nonverbal (-.335), and Verbal (-.540) Intelligence. Thus, Intelligence scores may have some influence on Planning, Planned Composition, and Writing, but performance on intelligence tests can not explain any of these parameters better than the rest.

Separate Correlations for Good and Poor Writers Matched on IQ:

The group difference reported before with IQ as a covariate was further analyzed by

examining the correlations of our target variables separately for the Good and Poor writers matched on IQ to test our 3rd Hypothesis. The other purpose was to test our proposition (mentioned as the critical level hypothesis earlier) that the relationship of planning and writing may be good only for the Good Writers, who are likely to show a great deal of variability on both these skills.

First, all the children who had a Verbal CCAT score between 90 and 112 were selected and then from this pool of children those who had a score of 100 or less on Writing Test (Spontaneous Writing Quotient) were designated as poor writers and those who had a score of 110 and more on Writing Test were designated as Good Writers. The sample size was 24 and 22 for the Poor Writers and Good Writers Group respectively. As expected, these two groups were not significantly different on Verbal, Quantitative, or Nonverbal Intelligence (all Fs < 1, see Table 8).

The correlation coefficients of Planning, Planned Composition variables, and Writing computed separately for the Poor and Good Writers are presented in Table 9. A few interesting and important correlations were observed from these two matrices. First of all, the correlations of Writing with Planning-A and Planning-B were higher and significant for the Group of Good Writers ($r=-.402$, $p < .05$ and $r=-.477$, $p < .01$) than the Group of Poor Writers. Secondly, Writing Scores were significantly related to Mechanics ($r=-.416$, $p < .05$) for the Poor Writers, and Individuality ($r=-.379$, $p < .05$) for the Good Writers. Finally, Planning (A or B) was related to Expression ($r=.454$, $p < .01$), Organization ($r=.318$, $p < .06$), Wording ($r=.583$, $p < .01$), and Mechanics ($r=.318$, $p < .06$) for the Group of Poor Writers, but was not related to any aspect of Planned Composition for the Group of Good Writers.

For the Poor Writers, Writing performance was related to mechanics (sentence structure, punctuation, and spelling), a finding which has been reported by many other researchers. For example, Wong et al. (1989) have found that LD adolescents focused exclusively on spelling, punctuation, and neatness. MacArthur et al. (1991) reported that

Table 8

Multivariate Analysis of Variance of Intelligence Measures for Good and Poor Writers

Test	F	DF	Sig. of F
Wilk's Lambda	1.510	3, 42	.226

Univariate F-Tests (DF=1, 65)

Tests	Group	Mean	SD	MS error	F Value
Verbal	Poor Writer	103.875	9.038	67.391	0.515
	Good writer	102.136	7.193		
Quantitative	Poor Writer	110.208	14.638	199.449	0.478
	Good Writer	113.091	13.536		
Nonverbal	Poor Writer	110.333	11.439	101.245	0.940
	Good Writer	107.455	8.296		

Poor Writers: N=24 ; 100 or less on spontaneous Writing Quotient of TOWL
Good Writers: N=22 ; more than 110 on Spontaneous Writing Quotient of TOWL

Table 9

Correlations of Planned Composition Variables with Planning and Writing for Poor and Good Writers Matched on Verbal Intelligence

Poor Writers(N=24)

Variables	Expression	Organization	Wording	Mechanics	Individuality	Writing
Planning-A (all tests)	.454**	.318†	.583**	.303	.080	.223
Planning-B (harder tests)	.302	.213	.502**	.318†	-.142	.119
Writing	-.014	-.245	-.127	-.416*	-.096	

Good Writers(N=22)

Variables	Expression	Organization	Wording	Mechanics	Individuality	Writing
Planning-A (all tests)	.001	.004	-.080	.125	.006	-.402*
Planning-B (harder tests)	-.045	-.029	-.007	.055	-.012	-.477**
Writing	-.209	-.115	-.257	-.138	-.379*	

Poor writer = 100 or less on Spontaneous Writing Quotient of TOWL
Good writer = more than 110 on Spontaneous Writing Quotient of TOWL
† $p = .06$, * $p < .05$ and ** $p < .01$

LD students made 76% changes in mechanics such as spelling, capitalization, punctuation, and handwriting to improve their writing. Thomas et al. (1987) have reported that LD students produced significantly more errors in spelling, handwriting, and syntax. In all these cases LD students' writings were inferior to the the writings of the high achieving students. On the other hand, Individuality was related to the writing performance of the Good Writers. Individuality was scored high if a child's writing reflected "unique or creative approach to material; unusual or original ideas....." (Ashman, 1978, page 140). Support for this finding comes from a number of sources only indirectly because uniqueness and originality subsumes a number of aspects that are difficult to define objectively. For example, Wong et al. (1989) found that good writings were judged to be more interesting, better organized, and selective in the choice of words than the poor writings of the LDs. Biggs and Collis (1982) considered creative and original writings to be at a 3rd or 4th level called "relational" and "extended abstract" respectively; where as at the first (unistructural) or second (multistructural) level the writing was not considered creative. In its highest form (extended abstract) the writings may involve (a) recognition of different layers of meaning that are extended beyond the chosen context and (b) innovative use of the medium.

The other part of the correlations were that cognitive tests of planning were related to most aspects of planned composition (expression, organization, wording, and mechanics) for poor writers, but there was very little relationship between planning and writing. For the good writers, planning was related to writing, but not related to the planned composition. This difference in the relational pattern of planning, planned composition, and writing for the good and poor writers may be explained in terms of a hierarchical order in these constructs, planning being at the lowest level and writing at the highest level. In such a system, planning is closer to planned composition and variability in one may influence the other as seen with the poor writers. The relationship of planning with writing was not found here, because the group was chosen from the lower end of the

writing performance, with very little variability on this measure. However, to observe the influence of the lowest function such as planning on the highest function such as writing, the group is expected to be very proficient in both, most likely a characteristic of the good writers. A hierarchical order of relationship among these variables moving from planning to writing through planned composition is shown in a Path Analysis later.

Factor Structures of Planning and Writing Tasks in Relation to Other Variables:

The next step of analysis was to examine the factor structure of Planning and Writing variables in relation to other relevant variables. Accordingly, Planning, Writing, Teacher's rating of student writing, Student performance in Language Arts, Verbal, Nonverbal and Quantitative CCAT scores, Vocabulary and Reading Comprehension, Math Concepts, and Math Problems scores of CTBS were subjected to principal component factor analysis with orthogonal solutions. The results of a two factor orthogonal solution, reported in Table 10, showed a split loading for Writing. One part of writing loaded on a factor along with Teacher's Rating, Performance in Language Arts, Verbal IQ, Vocabulary, Reading Comprehension, Math concepts and Math Problems. The other part of writing loaded on a factor with Planning, Quantitative and Nonverbal IQ, Math Concepts and Math Problems. Math Concepts and Math Problems had also a split loading with both the factors. Similar factor loadings were observed for an oblique solution for the same variables with a factor correlation of -.389. On the basis of these factor loadings it is hypothesized that writing is not an unidimensional construct. With a two dimensional structure of writing, one aspect may involve linguistic competency and the other, a more conceptual plan and direction that determines the structure for the composition. It is however, recognized that writing scores may even show more than two dimensions depending on what other variables are factored with it. Most researchers seemed to suggest two major components of writing conceptually. MacArthur et al. (1991) groups them into "mechanical" and "substantive or content", with the former referring to spelling,

Table 10

Principal Component Analysis of Planning and Writing Tasks with other Tests: Orthogonal Two Factor Solution

Tests	Factor I	Factor II	h^2
Planning	.075	**-.832**	.698
Writing	**.470**	**.319**	.323
Teacher's Rating on writing	**.797**	.246	.696
Performance in Language Arts	**.702**	.305	.586
Verbal IQ	**.849**	.279	.798
Quantitative IQ	.487	**.715**	.749
Nonverbal IQ	.441	**.691**	.672
Vocabulary	**.880**	.050	.776
Comprehension	**.817**	.238	.725
Math Concepts	**.538**	**.617**	.671
Math Problems	**.610**	**.575**	.703
Eigenvalues	6.181	1.214	
Percent of Variance	56.2	11.0	

h^2 = communality estimate

punctuation etc. and the later referring to organization, structure of the composition such as beginning, conclusion etc. Lynch, & Jones (1989) classified them as the "product variables" (punctuation, grammar, hand writing) and the "process variables" (writing strategy, planning, and control of text structure). There may not be a consensus on a two factor model of writing, but it is recognized that one factor has to do with the rules of the language, and the other factor has to do with such aspects as planning, and organization.

Independence of Writing and Planning Constructs in a Factor Analytic Solution:

With some related subtest measures in each of the three major constructs of our discussion, the question of independence of these measures was examined by factor analyzing all subtests of Writing, all subtests of Planned Composition, and all subtests of Planning put together. An orthogonal solution (see Table 11), extracted three factors with the respective subtests of each measure clearly loading on one factor. The first factor was described by the Planned Composition variables contributing a variance of 38%. The second factor was described by the subtests of Writing contributing 14.5 % of the variance. The third factor was described by the Planning Tasks contributing 11.8 % of the variance. An oblique solution elicited similar factor loadings with correlations of .186 between factor 1 and factor 2, -.361 between factor 1 and factor 3, and -.121 between factor 2 and factor 3. Thus the three measures of our study were considered to be fairly independent of each other, assessing three distinct cognitive functions. An additional reason for performing this analysis was that the Path Analysis, which is reported next use a marker variable for each construct. The subtest that had the highest loading on a particular factor was chosen as the marker variable for that measure with the assumption that, that particular variable may be the best indicator of that factor.

Linear Structural Relationships among Planning, Planned Composition, and Writing:

The final analysis involved examining the structural relationships among the

Table 11

Principal Component Analysis of Writing, Planned Composition, and Planning Tests: Orthogonal Solution

Tests	Factor I	Factor II	Factor III	h^2
Thematic Maturity	-.030	**.714**	-.024	.512
Contextual Vocabulary	-.276	**.643**	-.112	.502
Syntactic Maturity	-.429	**.748**	-.143	.765
Contextual Spelling	-.106	**.855**	-.035	.743
Contextual Style	-.368	**.428**	.027	.320
Expression	**.885**	-.211	.095	.837
Organization	**.871**	-.264	.030	.829
Wording	**.862**	-.132	.188	.796
Mechanics	**.705**	-.231	.259	.617
Individuality	**.847**	-.115	-.054	.734
Planned Codes	-.047	-.107	**.741**	.562
Planned Connections-Numbers only	.134	.141	**.783**	.651
Planned Connections-Numbers & Letters	.348	-.043	**.674**	.576
Matching Numbers	-.009	-.186	**.727**	.563
Eigenvalues	5.326	2.026	1.654	
Percent of Variance	38.0	14.5	11.8	

h^2=communality estimate

variables (planning, planned composition, and writing) using maximum likelihood method (Joreskog & Sorbom, 1989) to test our 4th Hypothesis. Based on the theoretical assumptions it was expected that Planning tasks would influence Planned composition, and Planned Composition would influence Writing performance. The influence of Planning directly in Writing was not expected for a group of writers that included both Poor and Good Writers. It was already seen before that Planning was significantly related to Writing only for the group of Good Writers. The Path Analysis here was performed on the entire sample of 107 students (good and poor writers included) because of two main reasons: (1) the structural relationship of the three constructs under investigation in a general population of all kinds of writers is more meaningful, (2) with a larger sample size of the entire group, the structure of the model is expected to be relatively more stable and possibly generalizable to a larger population.

In a first solution, the total scores of Planning, Planned Composition, and Writing Tasks were used as single predictors of their respective constructs to provide optimum reliability for each measure. The data indicated an unidirectional path from Planning to Planned Composition and another unidirectional path from Planned Composition to Writing (see Fig. 8). With a goodness of fit index of .992, adjusted goodness of fit index of .984, the Chi square for the model was 1.24 (df=3, p=.743), demonstrating a good fit for the solution. The beta value in standardized regression weights for the path describing Planning to Planned Composition was .529 and the beta value for the path describing Planned Composition to Writing was -.802. As expected the beta value for a path from planning to writing was very low (.062).

In a second solution, subtests of the three variables were entered to indicate each construct. An attempt to enter all the subtests to indicate each construct failed to produce any meaningful solution. Hence in a second attempt, only a few subtests were entered to represent a construct. Three subtests for writing, four subtests for Planned Composition, and three subtests for Planning, selected on the basis of highest factor loadings, were

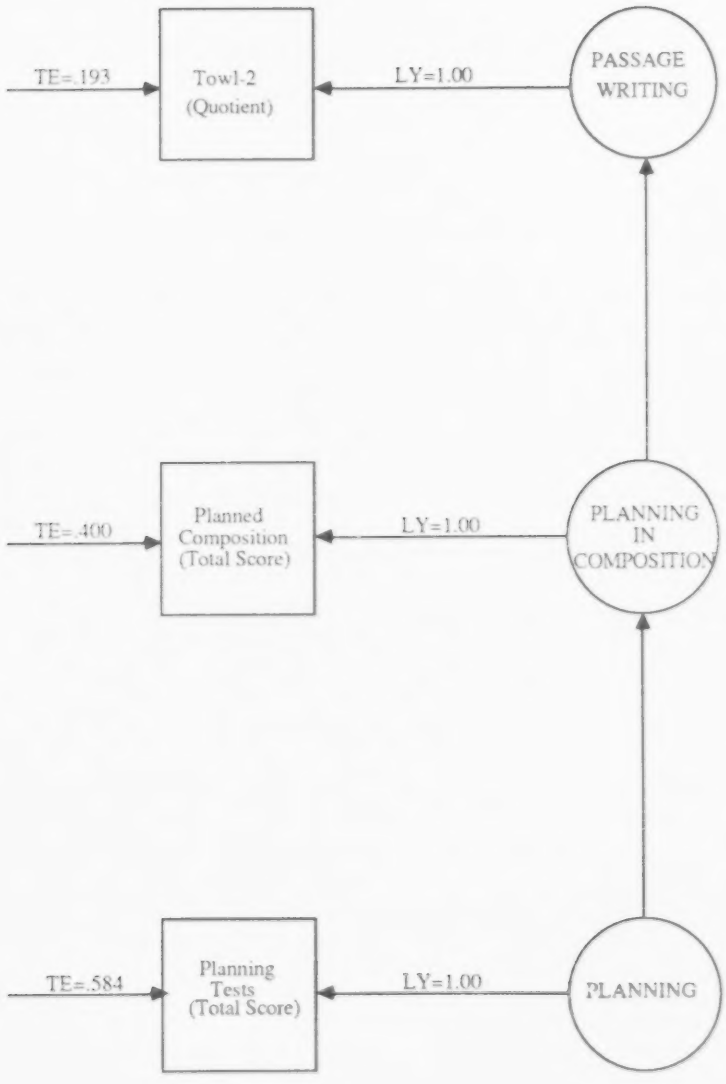

Figure 8. A Path Diagram of Planning, Planning in Composition, and Passage Writing
TE=Theta Epsilon, LY=Lambda Y, BE=Beta

entered in the Path Analysis. The Lambda value for the subtest, that had the highest factor loading for a construct, was fixed at 1.00 and the rest of the subtests were set free. With these parameters (see Fig. 9) the model had a goodness of fit index of .886 (adjusted fit index=.886), and a Chi Square value of 72.19 (df=55, p=.06). As shown in Fig. 9, the Beta value in standardized regression weights, for the path from Planning to Planned Composition was .214, and for the path from Planned Composition to Writing was -.504. The minus sign was due to the method of scoring for the variables concerned; a lower value for Planned Composition meant higher efficiency and a higher score meant higher efficiency for writing. The standardized lambda y weights, and squared multiple correlation values for each task for this solution are presented in Table 12. Due to high correlations among the planned composition variables, problem of colinearity (or multicolinearity) was expected. However, the lambda y values for the planned composition tasks were not unreasonably high to suspect any such problem. High theta epsilon values, particularly for the thematic maturity subtest of the spontaneous writing task, and all the three planning tasks indicate some sources of error for their respective latent variables in relation to the model. Nevertheless, this framework provides a basis for conceptualizing the relationship of planning and writing.

It may be reminded here that the planned composition variables were obtained from the writing samples of the spontaneous writing task. Therefore, some extraneous influence, such as having a bad day or lack of motivation, cannot be completely ruled out that may affect both these measures concurrently, increasing their relationship. In a future study, planned composition ratings may be obtained from an independent sample of writing to test the model proposed here. In the present case however, if the model is true, then the relationship of planning and writing should be near zero or very small if the effect of planned composition is partialed out. On the other hand, if this partial correlation is high, a path from planning to writing would be indicated for the model. It was found that the correlation of planning and writing is near zero (r=-.07) when planned composition is

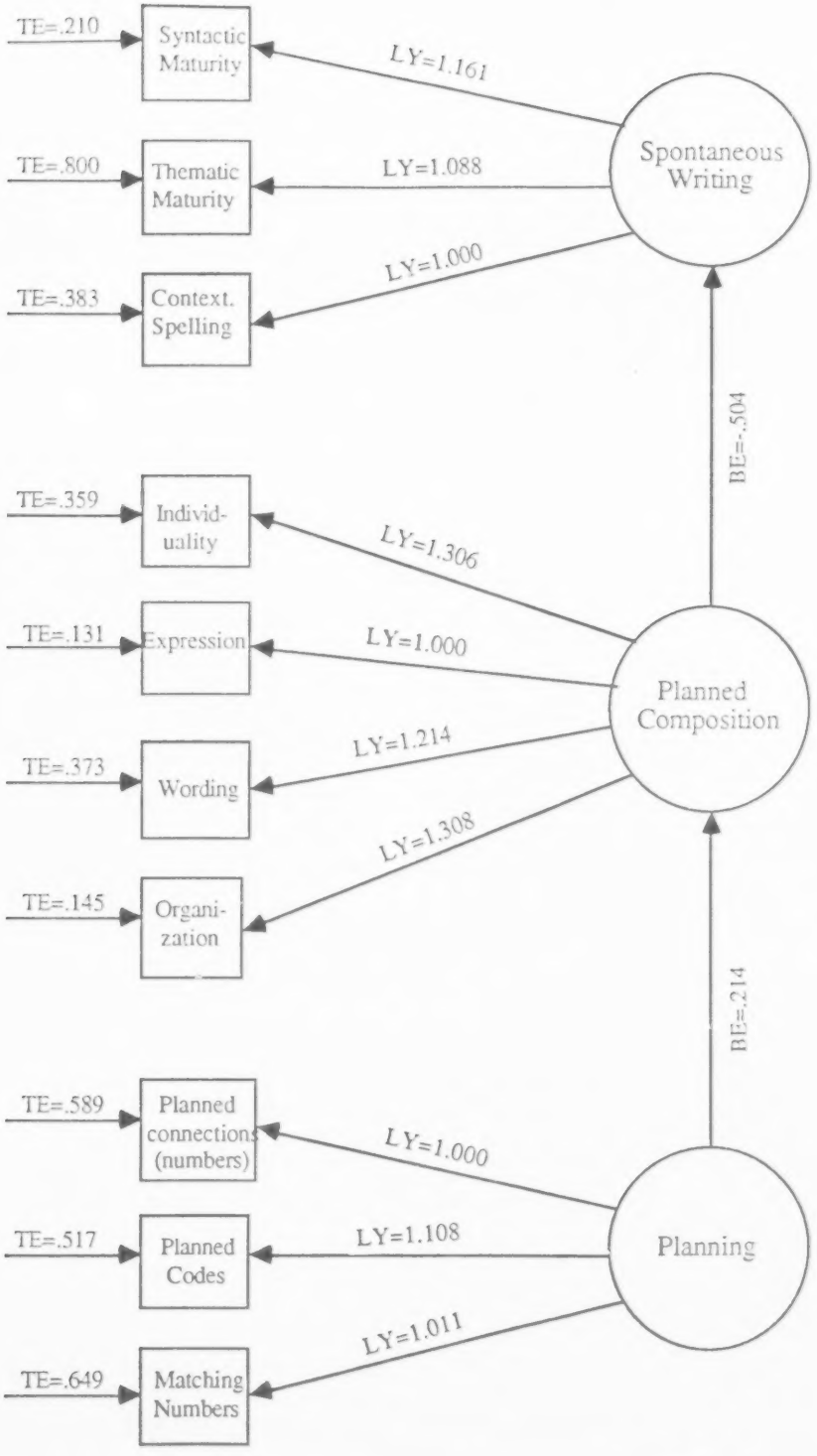

Figure 9. A Path Diagram of Planning, Planned Composition, and Spontaneous Writing
TE=Theta Epsilon, LY=Lambda Y, BE=Beta

Table 12

LISREL Maximum Likelihood Estimation of Planning, Planned Composition, and Writing Relationship for Grade 8 Children (N=107)

Indicators	Planning	Planned Composition	Writing	R^2
	(Standardized Lambda Y)			
Matching Numbers	.686			.421
Planned Codes	.752			.523
Planned Connections	.679			.439
Organization		.925		.855
Wording		.858		.679
Expression		.923		.867
Individuality		.707		.574
Contextual Spelling			.704	.564
Thematic Maturity			.766	.423
Syntactic Maturity			.817	.813

Goodness-of-Fit Indices for the Whole Model

Chi Square = 72.19 (df=55, p=.060)

Goodness-of-Fit Index = .886

Adjusted Goodness-of-Fit Index = .886

Root Mean Square Residual = .110

partialed out. Thus the model with planned composition as a mediational process linking planning and writing was adequately supported by the data obtained from this study.

In a final analysis, all the variables except "expression" and "organization" were removed from the planned composition construct of the second solution reported above. The purpose here was to test the model with planned composition representing only the rating scales that were indicative of planning in writing. From the descriptions of the planned composition rating scales of Ashman (1978) (see Appendix D), it was believed that the subscales "expression" and "organization" may indicate planning in writing more directly than the other scales such as, "wording", "mechanics", and "individuality". The planning and writing constructs were represented by the total score of the cognitive tests of planning and the total score on TOWL respectively. The Chi square for this model was 0.03 (df=2, p=.985) with a goodness of fit index of 1.00 and adjusted goodness of fit index of .999, indicating a good fit for the data. The beta value for the path from planning to planned composition was .538 and the beta value for the path from planned composition to writing was -.979. The beta value for a path from planning to writing was found to be .035 and was considered very low as before. This model is similar to the earlier models in indicating that competency in the use of strategies in general problem solving (a major characteristic of the Planning Tasks), is an indication of predicted writing performance, which is mediated through an ability to successfully organize text structures in the writing context (as measured by Planned Composition). Studies reported in the second chapter have demonstrated LD students' or Poor Writers' inability to use a plan of action in expository writing. But the source of that deficiency has not been identified before. In the LD studies, it is known that IQ's of these children are similar to the normally achieving children and therefore cannot be held accountable for their writing problem. So, this study has been able to fill that gap by showing that planning and organizational difficulties of the poor writers are possibly due to their difficulties in planning processes conceptualized in the PASS model (Das, Naglieri, & Kirby, in press).

Summary of the Results

The findings of this study can be summarized as follows. The Good Writers performed significantly better on all the Planning Tasks (Planned Code, Planned Connections, and Matching Numbers), and all the Planned Composition Variables (Expression, Organization, Wording, Mechanics, and Individuality) than the poor writers. However, this difference existed only for the test of Matching Numbers from the Planning Tasks, and for the Expression, Organization, Wording, and Mechanics variables from the Planned Composition variables, when the effects of Verbal Intelligence was removed.

For a sample of 107 subjects, which included the good and poor writers from above, showed that the correlations of Writing with Planning Tasks were .195 to .240 (for "all items", and only for the "harder items"), and correlations of Writing with Planned Composition variables were .389 to .520 (.519 with the total score). The correlations of Planning with Planned Composition (total score) were .262 to .279. The relationship between the Intelligence scores (verbal, quantitative, and nonverbal) and Planning, Planned Composition, and Writing were all in their .3s and .4s, indicating that intelligence accounted for a good part (10 to 22 percent) of all these variables. Nevertheless, Planning, Planned Composition , and Writing seemed to be very distinct variables, with Planned Composition and Writing more similar than Planning and the rest.

Separate correlations for the Good and Poor writers matched on verbal intelligence, with a score of 90 to 112 in each group, were obtained. It was found that Writing was related to Planning Tasks only for the Good Writers, with a correlation coefficient of .402 to .477. On the other hand, Planning was related to most of the Planned Composition variables, with a correlation coefficient of .318 to .583, only for the Poor Writers. Finally, Writing was related to Mechanics for the Poor Writers (r=.416), where as, Writing was related to Individuality for the Good Writers (r=.379). These correlations indicated that, for the Poor Writers, a difference in their ability in general planning may affect expression,

organization, wording, and mechanics aspects of their written compositions. However, ability in written language, as assessed by TOWL, is determined only by mechanics (sentence structure, punctuation, and spelling) for this group. On the other hand, for the Good Writers, general planning and Individuality (originality and uniqueness) determined writing performance (TOWL).

The factor analyses of 'general planning' and 'writing' with other tests indicated that 'writing' may have at least two dimensions; one aspect may involve proficiency in linguistic components, and the other aspect may be related to conceptual planning, and organization.

Finally, a test of linear structural relationship among Planning, Planned Composition, and Writing suggested that Writing may be determined by a relatively stronger path from Planned Composition (beta=.802), than the path from Planning to Planned Composition (beta=.529). Two different path analyses, one based on single predictors, and the other based on multiple predictors, suggested that Planning (general planning) influenced Planned Composition (variables reflecting planning in composition), and Planned Composition influenced Writing (spontaneous writing of TOWL). Thus the influence of Planning in Writing is mediated through Planned Composition. In other words, good writing is determined by how well the writer can organize and plan his/her composition. The competency in this ability (planning in composition) is most likely to be determined by efficiency in general planning. One way to verify this assumption would be to train people in global planning processing and then in a task that uses planning in writing (bridging task) to examine if writing performance can be improved.

The Study described above basically tested the evidence of planning in writings of good and poor writers and then in the framework of a model. However, this approach to explore the nature of planning may not be complete without looking at *how* good writers plan differently from the poor writers, in terms of the content of their planning processes. Therefore, in Study 2 that follows, the verbal reports of Good and Poor Writers are

compared on certain basic indicators of planning. These verbal reports were obtained while the subjects, either a good writer or a poor writer, chose a topic from four alternatives to write an essay and answered a few questions asked by the researcher relating to how they chose a topic.

CHAPTER V

STUDY 2 : METHOD AND RESULTS

Method

Background of the Study

This study was focused on investigating the planning and organizing process in composition by examining the verbal reports obtained from the students while they were engaged in writing a reflective essay. In a pilot study, one expository writing task was chosen from Bereiter and Scardamalia (1987) and selected students were asked to write an essay on "why do students fail? and what leads to success at school? With a brief practice trial, subjects were instructed to think aloud from the moment the task was given until the writing was over. Other than reminding the students to think aloud when they were found to have stopped verbalizing, no other instruction was given. This procedure was in congruence with the Concurrent Verbalization Method of Ericsson and Simon (1980). It requires articulation of one's ongoing thought as it occurs. But it was observed that the subjects found themselves blank for few seconds before a new idea or point was made, forced verbalization slowed down their thinking process, and vocalization primarily included the material that was being printed. Hence some modifications in the administration of the test were necessary for the main thinking aloud study. The modification included instituting a practice trial in which the subjects were required to perform the Block Design Task of Wechsler Intelligence Scale for Children-Revised (see Meyers, Lytle, Palladino, Devenpeck, & Green, 1990) and practice in thinking aloud about their favorite sport (see Short, Evans, Friebert, Schatschneider, 1991). Secondly, thinking aloud was allowed to stop as soon as they began writing the main essay. Finally, some standard questions were asked to each student following the completion of writing to get an approximate idea on how they felt about the whole process. The probes were

carefully chosen to minimize any leading statements about their answers. Ericsson and Simon (1980) argued that if the subjects are not aware of the fact that they are subsequently going to be asked to report on their processes, the reporting task cannot affect those processes. At the same time unlike the concurrent verbalization method, there is a chance of losing authenticity of a report obtained retrospectively. However, utilizing concurrent verbalization followed by a retrospective report, it was expected to get the maximum output from the students. The other modification included replacement of the single expository essay from the pilot study with four reflective essays from the International Writing Tasks (Gorman, Purves, and Degenhart, 1988) in the main study. It was expected that the task of choosing one essay from four alternatives may induce some planning and judging activity, particularly for the poor writers, that was lacking previously.

Subjects

Nine Good Writers and eleven Poor Writers were chosen from the entire sample of 107 children from Study 1. The Good Writers were the subjects who had a 6 or 7 (superior or very superior) on the teacher's rating of their writing on a seven point scale, and 119 and above on the Spontaneous Writing Quotient (classified as Superior and Very Superior). The Poor Writers were the subjects who obtained a teacher's rating of 2 or 3 (poor or below average) and a score of 107 and below on the Writing Test (classified as Average and Low Average).

Procedure

After the subjects arrived in the testing room that was equipped with a tape recorder and a desk top microphone (disk type), a brief introduction was given about the task and the procedure. The students practiced thinking aloud while constructing designs from the Block Design Test following a demonstration for the first item by the writer. Only the last half of this task was recorded to get an idea about the child's overall ability in this

somewhat unusual method. The second part of the practice trial involved telling an imaginary six-year-old boy/girl about how to play a game the subject chose to describe. Only one student did not have a favorite game and chose to tell about, 'how to take care of your pet', instead. This part of the verbalization practice was recorded completely. After ensuring that the subject was comfortable with the thinking aloud procedure, the main task was given. The main task required the subjects to choose one topic from four different topics and write an essay not exceeding about a page. The topics were: 1. Does watching television make it more difficult to think independently? 2. Should children be able to choose the subjects they study in school? 3. Do young people today face more challenges than what their parents faced? and 4. Should there be age limits (a minimum age) on watching certain movies, driving, and drinking? The tape recorder was turned on as soon as the questions were given to the students to record all verbalizations from reading the topics, making decisions in choosing a topic, to making notes and rough drafts. The recorder was turned off only for the final draft, because no additional information was found other than verbal repetitions of the written material. After the end of writing, the subjects were asked few questions concerning their main thoughts during writing, the reason behind choosing the topic, their self perception as a writer, and their idea of an ideal process of writing on a topic. See Appendix E for the detailed instructions and the probes used for this study.

Procedure for Analyzing Verbal Reports

Verbal reports were obtained from two sources: (1) from the think-aloud protocols collected before the main essay writing took place and (2) the responses of the students to questions asked by the present writer after their writings were over. The verbal reports from both these sources were evaluated by five indicators of planning and organization as described below: (1) Interpretation of the questions: This involved analysis of the meaning and intentions of each question (Biggs, 1988). Following this criterion the think-aloud

protocols that indicated adequate interpretation of the questions were assumed to have demonstrated planning. Then how these interpretations were different for the good writers and the poor writers are shown in the discussion in each section. The statements indicating interpretations of questions were obtained only from the think-aloud protocols. (2) Consideration of an audience: Bereiter & scardamalia (1987) and Biggs (1988) have argued that consideration of an audience can guide the subsequent writing of a student. The evidences of a direct reference to an audience by a child was collected from the verbal reports and was found that all the four writers who mentioned about an audience were from the group of good writers. In the discussion on this section the actual statements are presented. (3) Perception of a good and bad writer and (4) Suggestions for the young writer: Both these criteria involved the writers' awareness of the strategies and steps used by an experienced writer. It has been suggested that without this awareness the composition would lack cohesion and structure (Bereiter & scardamalia, 1988; Englert et al. 1988). Verbal data for these two questions were obtained during the interview that followed the essay writing. The differences in the awareness of the good and poor writers of this study as articulated in their responses are presented in the respective sections below. (5) Self evaluation: It has been indicated that the inability to evaluate one's own performance is a cognitive as well as metacognitive aspect of the composing problem (Flavell & Wellman, 1977; Graham et al. 1991). Under this criterion the differences between the good and poor writers in terms of their self perception have been presented. The verbal reports of the poor writers are contrasted with the verbal reports of the good writers to show primarily *how* they are different on each of these five criteria. It is recognized that inability to articulate appropriately by a child can influence the validity of verbal reports. By providing practice trials until the child felt comfortable with the thinking aloud procedure, some control for the usefulness of the data was achieved. The limitations of the interpretation of verbal data has been acknowledged by Ericsson and Simon (1980) as well as Nisbett and wilson (1977). These authors have argued that consistency of verbal

reports with other behavior must be obtained to arrive at any meaningful conclusion.

Results and Discussion

Group difference (planning tests, rating scales, gender, and preferred question)

1. Difference on Planning and Planned Composition Variables:

It has been pointed out earlier that the two groups, the Good Writers and the Poor Writers were selected on the basis of their performance on TOWL-2 and Teacher's Rating. A number of t-tests were performed to confirm that the children in these groups are also significantly different on Planning, and Planned Composition variables as found earlier for a larger sample. The choice for multiple t-tests over a Multivariate test was primarily due to the smaller sample size in these groups (Huberty and Morris, 1989). The results of the t-tests (see Table 13) showed that the Good Writers were better planners (Mean=92.871) than the Poor Writers (Mean=101.593), $t=2.39$, $P < .05$. The Good Writers were also significantly better on all the Planned Composition variables; Expression, $t=4.10$, $p < .01$, Organization, $t=3.64$, $p < .01$, Wording, $t= 3.72$, $p < .01$, Mechanics, $t=5.39$, $p < .01$, and Individuality, $t=3.32$, $p < .01$. Note that a lower score on Planning and Planned Composition variables meant higher efficiency.

2. Group x Gender difference:

It is believed that during early adolescence, the physical and cognitive growth of girls are slightly faster than boys (Dworetzky, 1987). If girls have an advantage in articulation over boys at this age (13-14 years), then thinking aloud protocols may be different for boys and girls. So, it was necessary to examine if the boys and girls are evenly distributed in the groups of poor and good writers. It was found that, there were 6 females (66.6%) and 3 males (33.3%) among the nine good writers compared to 5

Table 13

t-tests for Planning and Planned Composition Variables for the Poor and Good Writers

Variables	Group	Mean†	SD	t Value††
Planning	Good Writers	92.871	5.592	2.39*
	Poor Writers	101.593	9.698	
Expression	Good Writers	2.222	0.972	4.10**
	Poor Writers	4.091	1.044	
Organization	Good Writers	2.444	1.236	3.64**
	Poor Writers	4.364	1.120	
Wording	Good Writers	2.222	1.302	3.72**
	Poor Writers	4.091	0.944	
Mechanics	Good Writers	1.889	1.269	5.39**
	Poor Writers	4.546	0.934	
Individuality	Good Writers	2.000	1.414	3.32**
	Poor Writers	3.727	0.905	

† Good Writers: N=9
Poor Writers: N=11
†† DF=18
* $p < .05$
** $p < .01$

females (45.5%) and 6 males (54.5%) among the eleven poor writers. However, this distribution was not significant, Chi Square=.90, $p > .05$.

3. Group x Question difference:

Since there were four questions given to the subjects, it was suspected that some questions might be more appealing to one group than the other and consequently influence the written composition. It was found that 3 subjects (33.3%) chose #2 and 6 subjects (66.6%) chose #3 from the Good Writers group. On the other hand, 5 subjects (45.5%) chose #2, 3 subjects (27.3 %) chose #3, and the rest 3 subjects (27.3%) chose #4 from the Poor Writers group. Even though question #3 seemed to be the most popular choice among the good writers, this distribution was not significant, Chi Square=4.343, $p > .05$.

4. Gender x Question difference:

It was observed that among the male subjects, 4 persons (44.4%) chose #2, 3 persons (33.3%) chose #3, and 2 persons (22.2%) chose #4, where as among the females 4 subjects (36.4%) chose #2, 6 subjects (54.5%) chose #3, and only 1 subject (9.1%) chose #4. This distribution was also not found to be significant, though female subjects had a tendency to pick question #3, Chi Square=1.145, $p > .05$.

5. Ratings of the essays by judges:

Two judges rated the essays written by the 20 subjects of this study to determine if the good writers (determined by the test of written language and the teacher's ratings) did in fact write relatively better essays than the poor writers. The judges were required to give a holistic score (one score) on the essays using the same rating scale teachers used previously to determine the quality of writing of a student. A score of 1 represented very poor and a score of 7 represented very superior on this rating scale (see Appendix B). The results of the t-tests showed that ratings of both the judges were significantly higher for the good

writers than the poor writers (see Table 14). It may be noticed from the Mean values, provided in Table 13, that the ratings of judge #2 was about .8 less than the ratings of judge #1 for both the groups with an overall Mean of 5.42 for the good writers and a Mean of 3.57 for the poor writers (4=average). The correlation between the scores of judge #1 and judge #2 was .838 ($p < .001$, N=20). These results provide additional support to the original classification of the good and poor writers as appropriate.

In summary, the students selected as good writers for this study, were found to perform better on the Planning, and Planned Composition tasks than the students who were selected as poor writers. The essays written by the good writers were judged to be better than the poor writers by two independent raters. These two groups of writers were not significantly different in terms of the question they chose, or in terms of the male to female ratio. Thus the difference in the writing quality of the good and poor writers may not be attributed to their gender, or the question they chose to answer.

Group difference on the thinking aloud protocol: note taking and main essay

The next stage of the analysis involved comparison of the poor and good writers on the total time, time taken to write the main essay, total words in the essay, and note taking. These analyses are, however, based on the assumption that the process of thinking aloud has not affected adversely or facilitated one group over the other. Ericsson and Simon (1980, 1984, 1985) have reported that measures of cognitive processes as success rate, method employed, or speed of performance were not different for subjects performing a task silently and while thinking aloud. So it was reasonable to assume that the difference in performance between poor and good writers may not be due to the process of thinking aloud.

The total time for performing the task included reading the 4 questions, deciding a topic while thinking aloud, note taking, writing the main essay, and making corrections to the final essay. With a mean total time of 60.667 minutes, the Good writers took

Table 14

t-tests for the Ratings by Two Judges on the Essays Written by Good and Poor Writers

Ratings	Group	Mean†	SD	t Value††
Judge #1	Good Writer	5.833	0.866	5.29**
	Poor Writer	3.954	0.723	
Judge #2	Good Writer	5.000	0.707	6.21**
	Poor Writer	3.182	0.603	

† Good Writers: N=9
Poor Writers: N=11
†† DF=18
** $p < .01$

significantly more time than the poor writers, who took a mean time of 46.500 minutes, $t=2.24$, $p < .05$ (see Table 15). Given the same task the good writers took more time and were involved in a lot more activities than the poor writers. It was observed that poor writers did not always read all the questions before selecting a topic, did not take notes or made any plans, and writing followed shortly after the questions were given. It was interesting to observe that the minimum total time for the two groups of writers was almost same, 35 minutes for the poor writers and 36 minutes for the good writers (see Table 16). On the other hand the maximum time was very different, 60 minutes for the poor writers and 90 minutes for the good writers. Possibly, the minimum activity of reading the questions and writing an essay requires about 35/36 minutes, which was the minimum for both the groups. It is quite likely to see that the maximum time is so different, because there is almost no limit as to how many times the writer may want to revise or add new points to improve his/her argument. When asked, some writers (mostly from the group of good writers) mentioned that they could have done a better job of revising and making a final copy if they had more time to do it.

Since good writers were invariably engaged in various other activities like note taking and sometimes making a rough draft, it was important to compare them with the poor writers in terms of the amount of time spent only on the final draft or the actual essay writing. It was found that the good writers spent significantly more time in writing the main essay, with a mean of 24.57 minutes, than the poor writers, who spent a mean of 14.40 minutes, $t=2.16$, $p < .05$ (see Table 15). Not surprisingly, the essays written by the good writers were significantly longer than the poor writers, with a mean of 327.22 words for the former and 180.70 for the later group, $t=3.24$, $p < .01$ (see Table 15). However, on a measure of rate of words produced per minute, there was no difference among the writers, $t < 1.00$ (see Table 15). It can be argued then that the good writers wrote longer essays primarily because they spent more time writing the essay. It can't, however, be assumed that given the time poor writers will do the same.

Table 15

t-tests for Total Time, Final Draft Writing Time, Total Words, and Speed of Writing

Variables	Group	Mean†	SD	t Value
Total Time	Poor Writers	46.500	9.217	2.24*
	Good Writers	60.667	17.536	
Final Draft Writing Time	Poor Writers	14.400	5.582	2.16*
	Good Writers	24.571	13.489	
Total Words in the Final Draft	Poor Writers	180.700	57.623	3.24**
	Good Writers	327.222	129.810	
Words per Minute	Poor Writers	13.604	4.449	0.10
	Good Writers	13.799	3.646	

† Poor Writers: N=11
Good Writers: N=9
* $p < .05$
** $p < .01$

Table 16

Mean, SD, Median, Minimum, and Maximum Scores for Total Time, Final Draft Writing Time, Total Words, and Speed of Writing for the Poor and Good Writers†

Variables	Writers	Mean	SD	Median	Minimum	Maximum
Total Time in minutes	Poor	46.500	9.217	46	35	60
	Good	60.667	17.536	55	36	90
Final Draft Writing Time in minutes	Poor	14.400	5.582	13	9	25
	Good	24.571	13.489	19	13	45
Total Words in Essay	Poor	180.700	57.623	159	124	291
	Good	327.000	129.810	300	166	589
Words per Minute	Poor	13.604	4.449	14.611	6.280	20.750
	Good	13.799	3.646	14.667	8.556	18.500

† Poor Writers: N=11
Good Writers: N=9

Indirect support for these issues (time, and length) comes from a number of sources. For example, Nodine, Barenbaum, and Newcomer (1985) found that normally achieving students wrote twice as many words per story as did the Learning Disabled or Reading Disabled students. Similarly, Wong, Wong, and Blenkinsop (1989) found a significant difference in the length of three essays comparing eighth and eleventh grade Learning Disabled with eighth grade Normally Achieving students. The Learning Disabled students wrote 117.52, 110.52, and 81.76 words and the Normally Achieving students wrote 237.47, 175.60, and 136.29 words for two "reportive essays" and one "argument essay" respectively. In the present study, even the poor writers wrote longer essays (Mean of 180 words for an argument essay) than normally achieving students in Wong et al. study (136.29 words). In fact Wong et al. used the same argument essay that Bereiter and Scardamalia (1987) have used and it was one of the four topics given to the students in this study as well. The possible difference in the length of the essays may come from the fact that all students wrote their essays individually in the presence of the researcher in this study, where as in Wong et al. study the students wrote the essays in a group in the school library. Nevertheless, the evidence for a difference in the length of the essay for poor and good writers is there. With a longer essay, the good writers are expected to take more time for completing their task and there is no reason to assume any motoric speed difference in word production among the writers. Christenson, Thurlow, Ysseldyke, and McVicar (1989) have offered an explanation for the difference in the amount of text production (length of essay) of the good and poor writers. In a survey they found that the maximum time spent in actual writing by a child with reading or writing problem is about 25 minutes per day, compared to 33 minutes per day for the average child in a sample of U. S. A. children in grades 2, 3, and 4. They argue that this loss of time in practising writing, which was statistically significant, may be partly responsible for a difference in the amount of words produced by the young writers. Graham, Harris, MacArthur, and Schwartz (1991) believe that students with learning problem (including writing problem) may have

difficulty "sustaining language production" during writing due to lack of such external assistance as a conversational partner that helps sustain oral communication. During questioning, in this study, most poor writers admitted that they are better at oral presentation, than at written production. Scardamalia, Bereiter, and Goleman (1982) maintain a similar view to explain the production deficiency of the poor writers. They argue that the absence of an external cue may explain why LD students "prematurely terminate their act of composing".

Another important aspect was note taking prior to the actual essay writing. The thinking aloud protocols indicated that note taking not only helped the writers organize their main essay but also helped them add and delete points that they thought were important or not important for their point of view. In many ways, the single most important indicator of planning in writing may be indicated by note taking. The note taking of good writers involved arrow marks to rearrange ideas, insertion of additional points, and grouping of ideas into clusters more often than the poor writers. From among the 9 good writers 7 took notes before writing (77.8%) and from the 11 poor writers only 3 took notes before writing (27.3%). This difference was significant, Chi Square=5.05, df=1, $p < .05$.

Bereiter and Scardamalia (1987) have shown a developmental trend in the note taking behavior of children. In a study they compared the note taking quality of grade 4, 6, 8, and university undergraduates, by counting the amount of transfer of material from the notes to the final draft. The transfer was progressively less and less from younger to older children. For the undergraduates, the note taking was a blueprint for their final draft with very little transfer of sentences or phrases. Thus for the good writers the plan for the writing assignment was primarily completed during note taking. The actual writing was a translation of the ideas generated during the note taking stage into the text. Therefore absence of note taking and planning the essay in terms of what to write and how to write, for the poor writers in this study, is a clear indication of "Planning deficiency" in their writing process. The note taking process reflecting planning and organization for the main

essay has been demonstrated by several authors (Lynch, and Jones, 1989; Newcomer, and Barenbaum 1991; Wong et al., 1989).

Analysis of Thinking Aloud Protocols and Interview: Evidence of Planning

1. Interpreting the question and choosing a topic:

Biggs (1988) has provided a summary of research in planning and its implication in writing. His view of the writer's *interpretation of the questions* involves analysis of the meaning and intentions of the question, which determines the direction that follows in actual writing.

It was possible to analyze the planning process of writers by providing 'four' questions and asking them to choose only one topic for writing an essay. This particular procedure may have forced some writers to think more about an appropriate topic, but nevertheless indicated more detailed planning activity from the thinking aloud protocols compared to a previous attempt where only one topic was given to write the essay (see method section of this chapter). It must be acknowledged, however, that how and why certain information is retrieved in response to various topics is impossible to capture through thinking aloud procedure alone.

It was observed that subjects who wrote relatively better essays (good writers) invariably judged each topic on its own, then judged a topic in relation to other topics, and finally how it related to their own experience, to decide on a topic for their essay. Also, writers may decide on a topic due to various other reasons. For example, a writer (ID-54) discarded question #1, because it has been discussed a lot already question #2 has only one side, and question #4 has lots of sides to it, but many people have talked about it already. So this particular writer chose question #3, which he thought had many different sides, such as physical challenge, emotional challenge, and social challenge. Table 17 (see Appendix F) lists all the 9 good writers and shows how they interpreted each question.

Few examples from this table may illustrate the typical process. One subject (ID-109) looked at question 1 and said, "...I don't know if I would write that one, because I think you can still think independently if you put your mind to it, because I do my home work infront of the TV". Then she looked at question 2 and said, "..No, I don't think so (children shouldn't choose their own subject at school), mainly because we don't know what we are talking about ". Then she moved on to question 3 and said, "I don't know if I could write that one, because I don't think I really know what our parents faced so that I can compare." Looking at the last topic (question 4) she said, "..kind of a tough one too." Then she took a moment to pick a topic and said, "...'think I am going to take, should children be able to choose the subjects they study in school (#2), because I think that's the one I know the most about the subjects and everything I have to do in school." Some other subjects chose the topic first and then provided rational as to why they chose that one. For example one subject (ID-39) said, "I like #3, because I think it is a good topic to write about. It's something that deals with me. Like #2, I know for sure it will never happen that way. Even if we are allowed to change our subjects and stuffs like that, it just I know the schooling is right the way it is. TV (#1) is like a boring subject to write about. Then with minimum age (#4), because there is already been minimum age put down on movies, drinking, and driving.... No. 3 appealed to me most because it was really the one I knew like a question. No. 2 and No. 4 , you really couldn't do anything about it." Other writers evaluated each question as they encountered them and made a tentative decision, and then modified their decision if necessary as they moved along to other questions. Such an example comes from subject #202. This writer looked at the first question and said, "...I don't know, it's kind of stupid." Then she looked at the second question and said, "well, that's interesting, may be." Then she moved on to the third question and said, "Yah, that one is good." Then she looked at the last question and said, "...well, first I don't really like the last one. But should children be able to decide the subjects they study in school (#2), that one is ok, because certain things that children should and (certain other things)

that parents should decide. But I think I would choose No. 3, do young people today face more challenges than what their parents faced?" Then she explained why she would choose No. 3 and how the challenges for the children are much more today in this society (see Table 17 for the details).

The thinking aloud protocols of the subjects who wrote relatively poor essays hardly showed any elaborate interpretation of the questions evidenced before by the good writers. The majority of the writers in this group showed very little successive scanning of the questions and evaluation of their own position clearly. The thinking aloud protocols indicating how they interpreted and chose a topic are reported in Table 18 (see Appendix F). It can be seen that only three subjects (ID-003, ID-005, ID-321) attempted successive interpretation of the questions quite similar to the good writers reported before. However, the quality of the interpretations were remarkably different. For example, one subject (ID-003) read all the questions, took a long pause to think about it silently, and then said, " the #4 about age limit on drinking and driving etc., I think there should be, because unless the young kids will do what ever they want. So I don't know, it does not appeal my interest. Students face more challenges (#3)... I don't think I will do that one, because I don't know what my parents did. Children should be able choose subjects at school (#2), I think I will do that one, because I think we should be able to pick what we want. Does watching TV (#1), I think watching TV does make difficult to think independently in certain subjects, but not all the time. So, probably, I will do #2." Two other subjects (ID-005 and ID-321) did a similar evaluation to decide a topic. Subject 321 interpreted in a way very similar to the way most good writers did. The other subject's (ID-005) interpretation of the question was based on what she likes ("I like to drink and go to movies") and what she hates ("I hate school".."I hate my parents") and lacked any systematic interpretation (see Table 18 for details). The majority of the subjects in this group (8 out of 11) did not systematically interpret the questions. The most typical process was to pick one topic and describe what they were going to say about the topic. For example, one subject (ID-011) read all the

topics and said, "..I think I will go with #4, no I think I will take should children be able to choose the subjects at school (#2) and I am going to disagree with this." Another subject (ID-015) looked at the topics and started writing the question #2 on her writing pad. She mentioned that she does not think before writing, she just writes. Subject-017 and subject-318 picked #1 first and then changed their minds to do a different one without providing any explanation as to what they disliked about their first choice and what they liked about their second choice. Invariably the views of these subjects on the topics other than the one chosen by them were not evident from their thinking aloud protocols. Presumably, these subjects did not seriously look at all the topics, or stopped thinking on any other topic once they found something to write on, or thinking aloud procedure could not capture the way they made decisions.

The above analysis provide some evidence as to *how* the good and poor writers chose a topic for writing an essay. The next step of the analyses involves examining *why* they chose a particular topic. This question was one of the many that were asked to the writers after the writing was over (see procedure section of this chapter). Basically, most writers (good and poor) seemed to choose a topic that they could relate to. Some of the good writers may have a better explanation of how it relates to them than other writers. Examples of the statements made by the poor writers include (see Table 18), "I picked #4 because out of the all four this one interests me the most (ID-005)" , "because the subject was school (ID-011)", "we talk about this more (ID-017)", "I am not too sure, I did not like the other ones (ID-028)", "well, I find with my experiences being younger I could compare what I am going through now...(ID-208)", "I thought it was important for me (ID-318)", "basically it reflects more on me than other ones do (ID-321)" etc. Examples of statements made by good writers include (see Table 17), "this is easy to relate to where I am and I have gone through (ID-035)", "because I think it is a good topic to write about. It's something that deals with me (ID-039)", "because it seemed to be an interesting topic. Something people have been wondering about for a while...parents think that we have it

easier, but I think that we have it harder than they do (ID-041).", "that's the one with most widely varied opinions. Other ones, there is really only one main opinion everyone has (ID-054).", "I had lot of information on #3 and #4. But I felt, well, this to me is more important,...this was about like us and our parents, which seems right now in the 90s to be such a great influence on families and how the parents should get along with kids and how we can communicate with each other. So I thought, well, that (#3) was more important than the age limit and all that (#4), because basically all those have been set for us already (ID-219)." etc.

In summary, good writers seemed to choose a topic that was more meaningful to their own experiences or that had impressed them in some way or other. On the other hand, poor writers did not have a clear indication of why they decided upon a particular topic (e.g. "because we are in school", "I like it" etc.). In terms of the process of choosing a topic, the good writers presented a systematic way of eliminating unwanted topics. In comparison, the poor writers seemed to be unsure about a topic, or took the one that they encountered first, demonstrating a lack of criteria for evaluating what they know most about a topic. Good writers judged a topic in various ways, whether it has been discussed a lot already, whether it is something teenagers face every day, or even due to the fact that they know a lot of things to talk about. Wong et al. (1989) have shown a similar difference in Good and Poor writers. They found that good writers have a "more mature understanding of what writing involves". For the skilled writers, writing was a purposeful activity in self expression and usually accompanied by a sense of satisfaction. Englert et al. (1988) believe that the writers knowledge about what they know, the metacognitive awareness, is the key element that not only decides what the writer is going to write but also determines how the writer is going to present what he/she knows. Poor writers do not have the facility to access that knowledge.

2. Importance of audience:

Biggs (1988) maintains that, "implicit in the planning process is the establishment, conscious or otherwise, of criteria that will guide both composition and transcription and subsequent review. Such criteria include: audience, originality, aesthetics and style, and compatibility with intentions (page 195)." Matured or experienced writers tend to consider the knowledge of the readers and may have a target audience for their topic. Bereiter and Scardamalia (1987) have proposed a classification system of "four levels of integration" according to the "number of mental units coordinated simultaneously" in writing (pages 155-176). They found that writers begin to display a sense of audience at Level 2 and above, indicating a more sophisticated writing. Level 1 or less competent writers did not show any recognition of audience at all. It was expected that evidence of the recognition of audience, if present, may be found in the writings of the good writers in this study. To avoid any scoring bias or confusion, only the cases with direct reference to audience are reported in Table 19 (see Appendix F). It is recognized that absence of a direct reference to an audience by a writer does not imply that s/he has absolutely no sense of audience. With this conservative estimate it was found that the four writers (see Table 19) who talked about audience were all from the group of nine good writers. One of the subjects (ID-054) mentioned that his essay was written for the parents who think that their life was much harder than their children, to show how they are wrong in what they believe (see Table 19). This subject also mentioned that if he were to write the same topic for the children (or teenagers), he would persuade them to be more understanding of their parents. Another subject (ID-109) maintained that she must write in a way so that the reader would be interested to read. One subject (ID-202) felt that the beginning paragraph should have "something to make the people interested" in it to catch the attention of the reader. Then one should write something that feels, as she put it, "as close to your heart as you can get". Another writer (ID-219) believed that while writing, she keeps in mind who may be reading that topic. Writing would be different for different target audience: such as teacher,

friends or just for self. However in this particular case, the essay would be only minimally different for different groups of audience. As mentioned earlier, there may have been other writers, who have an implicit sense of audience in their writing, that are not analyzed here. Nevertheless, it is apparent that these writers, who have explicitly mentioned about an audience, have planned their composition in view of their readers. This sort of plan was obviously missing from the essays of the poor writers. Awareness of an audience in the writings of adept writers is shown by Biggs (1988), and Wong et al. (1989). It is maintained that the sense of audience can be explicit or implicit and external or internal. An external audience is somebody else as opposed to the internal audience where the message of the topic is directed to self or an entity within the person who may be identified as different from the ideal self. The "explicit/implicit" criteria refers to an audience, person or group, in a topic directly or indirectly. Sometimes the writers may choose to withhold this reference to a group or person or a belief system deliberately, to create a special effect in their writings. In this particular study, however, there was no evidence for withholding the reference to audience in the composition and in the discussion that followed. So it was assumed that lack of consideration of the reader may be an indication of the absence of planning (Scardamalia and Bereiter, 1986).

3. Perception of a good and bad writer:

During the questioning period, which followed the essay writing session, both the groups were asked to describe what they thought good writers and bad writers do when they write . Comparison of the statements made by the good writers and poor writers indicated many interesting differences. It was observed that many poor writers didn't really know how and why the writings of good writers are so impressive compared to their writings. The statements made by the poor writers are presented in Table 20 and the statements made by the good writers are presented in Table 21 (see Appendix F). Examples of the statements made by the poor writers included, "...bad writers don't have a

very good vocabulary. They put a different opinion. Good writers can write on and they have more opinions (ID-003)", "...they (good writers) put different parts together and make a strong view point, so the readers can read them. But the bad writers just flop it all up (ID-005)", "...they (good writers) can put everything in a certain spot, so does not sort of look disorganized. For poor writers, I think that's because they just write, they don't really plot anything (ID-011)", "...bad writers might put different paragraphs and change the subjects a lot. Good writers stick on the subject and make it interesting (ID-017)", "...poor writers don't take time to read about it, think about it and stuff like that (ID-028)", "Poor writers probably don't use exciting words and they don't emphasize things much, like using adjectives and stuff...(ID-111)", "...smarter people I think have better ideas. The poor writers have ideas but they don't organize...(ID-318)". The good writers on the other hand made specific comments emphasizing "imagination", "sentence structure", "comparison of both sides", "experience from personal life", " use of known information, statistics, personal experience, little stories or examples", "the relation to the audience and readers", "organization of all the information", and "free expression of feelings and opinions" to characterize good writing (see Table 21 for details). Thus the good writers seemed to have access to a wide range of monitoring criteria through out the different stages of writing; whereas the poor writers had very little or no such strategy to guide their composing activity. In the literature, it has been shown that Learning Disabled students with writing difficulties were less aware than the high-achieving students of modeled writing strategies, steps, and writing process (Bereiter, Burtis, and Scardamalia, 1988; Englert, Raphael, Fear, and Anderson, 1988). These authors maintain that without this knowledge, the poor writers are not going to recognize strategies or employ any in a writing task. To benefit from modeled writing strategies, the poor writers must (a) know what the mature writers do (b) know how those objective are achieved, both in planning and in execution, (c) be guided through a task with those objectives in practice trials, (d) use on their own with an external aid, where they are labeled and examples provided, and

finally (e) use an internal mechanism to monitor and evaluate their own writing. At the last stage the writers may begin to use self discovered strategies to guide their own content and style in writing.

4. Suggestions for the young writer:

After knowing what each person thought about a good writer and a bad writer, they were asked to suggest to a student who is 3 years younger than them how s/he should write a good essay. The purpose was to see whether the knowledge of the process of writing is different for the two groups. By asking them to make the suggestions to a younger writer, more details of the process of writing in their description were expected. It was found that most writers made suggestions that had been taught in their class: gathering ideas, taking notes, making a rough draft, and then writing the final draft. The difference for the good writers, however, was found in terms of how to choose a topic before beginning the generic process, and some specific ways of structuring the essay that they found useful in their own writing. The suggestions from the poor writers and the good writers are presented in Table 22 and Table 23 respectively (see Appendix F). Some of the suggestions in Table 22, from the poor writers included, "...put down points as many as you can think of and then mix them all up into like organize them into conclusion, body, and everything and then do a rough copy (ID-003)", "...may be just use her opinion and think about what other people may think about that opinion and then write about it I guess..(ID-004)", "...Pick the view points that best describe the issue...(ID-005)", "..I will just tell him to first get all the points if you are not sure, then write a rough with that. If you are still not satisfied with the rough... keep on doing it and finally it will get better (ID-011)", "..I will give him two choices from the subjects I have from school... and tell him to get lots of information...from the library and write the essay (ID-017)", "choose something that you are interested in...get all the facts together in point form...put it in a fashion that it is interesting (ID-321)" etc. The suggestions from the good writers were

more detailed and included some of their personal styles (see Table 23). For example one writer (ID-035) suggested that, "...put yourself in a place of the person you are writing about, how it would affect them and in a good way or in a bad way. Think about about your own experiences....". Another writer (ID-54) suggested that, "write something close to your heart or something you enjoy doing. You don't necessarily need to know a lot about it. But if you like it, you will want to research it....". Regarding the structure of an essay this writer also suggested that, "if you write the introduction first, you are kind of stuck to what it says. I write to like the readers appetite, to get them interested...I will write the body first, then introduction, then the conclusion. Conclusion could be the continuation of the intro, summing things up, or it could be a way for the reader to get other information". Then he explained how he did it in his essay to end in a jocular way so as not to leave the reader feel so serious about what he had said. Another writer (ID-202) said, "...I always pick something that I feel strongly about, like in my heart. Like if (you) love dogs or something to write about, don't just write what dogs look like. Don't have to go outside, but to go like within the readers, so the readers can feel it inside....start writing down your ideas as fast as they come, even if the spelling is bad. When you are drained of all your ideas, group them together and then see which one idea catches their eye. May be ask for an opinion to see what catches the reader's eye. Then write about that...(ID-202)". Other writers (ID-219, ID-222) talked about brain storming to gather ideas, then narrowing down to something you feel comfortable with or you know about, more brain storming for gathering information on that topic, grouping them into categories, writing an introduction to introduce to the readers about what you are writing and why you are writing, and concluding with a summary of what you have said previously (see Table 23). These descriptions suggest that even though the poor writers knew the process of writing from their teachers, they had not developed the ability to apply that technique or make changes to suit the need of a particular topic, audience, or their own preferences.

It was, however, interesting to find that poor writers were able to suggest some

good points to the imagined young writer. Good writers' suggestions to the young writer were certainly more relevant and objective, but poor writers seemed to have some conceptualizations of writing that they could advise others to follow while they may have some difficulties doing it on their own. Similar observations were made by other researchers. In a study, MacArthur, Graham, and Schwartz (1991) found that when LD students with writing difficulties were asked to suggest revisions to their composition, only 28% noted any change in content or style. However, when they were provided with someone else's text, 76% made suggestions regarding substantive changes. So it is evident that somehow it is easier to make corrections to improve someone else's written work than one's own. The question of relevancy of those suggestions for change was of course a completely different matter. As reported before in the second chapter, only 19% of the proposed revisions had any significant effect on meaning. Other researchers have found similar benefits in asking poor writers to describe strategies for other students (Garner, 1987; Scardamalia and Bereiter, 1983). Englert et al. (1988) took this a little further by using vignettes with real names such as Sally, Pamela, and Mary for female subjects and John, Tom, and Bill for male subjects to make it more life-like, in their attempt to maximize student responses. Thus these findings point to some beneficial effects in the poor writers' effort in articulating some steps and goals in writing, at least for others, that are encouraging.

5. Self evaluation:

Finally, the writers were asked how they felt about themselves as writers and why they felt that way. It was believed that making an evaluation is an important aspect of how they will do in the future or with a different topic. Possibly experiences and insights from one situation can be transferred to other situations if the person is aware of his/her performance. Invariably the good writers were satisfied with their ability to write. Some of them provided explanations of when they feel they have done a good job (see Table 24

in Appendix F). One person (ID-054) said he does not feel that the job is well done until he has done all the revisions. Another writer (ID-109) said she is very opinionated and better at writing persuasive essays than descriptive essays. Another subject (ID-219) explained how she is experiencing the growth as a writer over the years with all the experience and learning and may even get better in the future. Some other writers felt good about themselves as a writer because of the marks they get (ID-222), possession of a large vocabulary (ID-035), or their ability to organize well if they are given enough time (ID-039, ID-202). None of the poor writers, on the other hand, described themselves as a good writer, or how they could perform better. A list of self evaluation statements by the poor writers are presented in Table 25 (see Appendix F). Many of these writers felt that they are not good at the tasks that were given to them, but they could write stories (descriptive essays!). Others felt that they could do better orally , but not writing on paper. Two of these writers felt they could do better if they tried harder. It may be interesting to find out if these writers could improve their writing as claimed in their preferred way or on a self selected topic. Flavell and Wellman (1977) maintain that recognizing that one has a problem is an important and basic metacognitive skill. Obviously, the poor writers in this study had that awareness; but it is not known if they think they could do something about it or have learned to feel helpless. Forsterling (1988) described that "learned helplessness" (Selignman 1981) can lead to motivational , emotional, and cognitive deficits. Interestingly, Graham, Harris, MacArthur, and Schwartz (1991) have reported that LD students were confident about their writing abilities and may, therefore, fail to generate the needed effort to accomplish the task. In this study, however, we found that all poor writers felt (see Table 25) that they needed to improve their writing skills. The difference in these findings is possibly due to the difference in classroom structure from where they were sampled. In the present study, the students were from the regular classes and they knew other high-achieving students in their classes with whom they were able to compare their work. On the other hand, in the Graham et al. study the students were from LD

classes and possibly they did not have a better referent to compare their performances. The writer can recall that some students (at least three), from the poor writers group in this study, were very apprehensive of the test and asked if they were in somekind of trouble, indicating that they knew that they are not perceived as "good kids". Without further investigation it can not be ascertained if these students' self perception was the result of poor self esteem and perhaps contributed by testing and instruction procedures in our school systems.

Summary of the Results

The main findings of this study follow. The Good and Poor Writers, who were chosen for this study to provide verbal reports of their writing process, were also significantly different on a holistic rating of their composition provided by two independent raters. Even though in the group of Good Writers, a particular question was chosen by a majority (66.6% chose #3), and there were more females (66.6%) than males, the chi square distributions were not significantly different from the Poor Writers.

The Good Writers took longer time (Mean=60.67 minutes), than the Poor Writers, to complete the assignment, which included, interpreting the questions, deciding a topic, note taking, writing the main essay, and making corrections to the final essay. The Poor Writers took less time (Mean=46.50 minutes) than the Good Writers and basically started writing the essay, sometimes without reading all the questions. The Good Writers also took more time (Mean=24.57 minutes) to write the final draft of the essay and wrote longer essays (Mean number of words=327.22) than the Poor Writers (Mean time=14.40 minutes, Mean words=180.70). However, there was no difference on the number of words written per minute between the Good and Poor Writers. It was presumed that, one of the reasons, Poor Writers wrote shorter essays, was because they spent less time writing the essay. It was observed that a lot of planning and organizing took place during

note taking, which preceded the main essay writing. While most Good Writers (77.8%) took notes before writing the main essay, very few Poor Writers (27.3%) chose to do that.

The analyses of the thinking aloud protocols and the responses to the probes after the essay writing revealed distinct differences between the Good and Poor Writers. To choose a topic, the Good Writers interpreted the questions in a variety of ways to judge each topic on its own, to judge each topic in relation to other topics, and examine how it relates to their own experience or relevant to the current social trend. Only 3 out of the 11 Poor Writers showed any elaborate interpretation of the questions similar to the Good Writers. Most Poor Writers took a topic and talked about what they could write about it. There was no indication of why they chose a particular topic, or what they thought about other topics, in their thinking aloud protocols.

The four writers, who talked about the importance of audience for their essays were all Good Writers. Only one of these writers maintained clearly that his essay was written for the parents, who do not give enough credit to their children for the things they are going through. He also added that the tone of the essay would be different if it were written for the children to persuade them to be more appreciative of their parents.

When both the groups of this study were asked about the difference between a good writer from a poor writer, the Poor Writers did not seem to know what the Good Writers do. Some of the characteristics of the bad writers as stated by the Poor Writers were that, 'they don't have a good vocabulary', 'very few opinions', or 'don't stick on the subject'. On the other hand, the Good Writers made specific comments emphasizing 'imagination', 'sentence structure', 'comparison of both sides', 'experience from personal life', 'use of 'known information, statistics, and examples', 'the relation to the audience and the readers', 'organization of all the information', and 'free expression of feelings and opinions'.

With regard to the suggestions for an younger writer, both groups appeared to recommend the process they have learned in their school, such as 'gathering ideas', 'taking

notes', 'making a rough draft', and then 'making a final draft'. The Good Writers provided additional suggestions with regard to the selection of a topic, and structuring the body of the essay they have found useful in their own experiences.

All the Poor writers thought they had not done a good job, because they 'did not try harder', 'did not like the topics', or are 'better at oral presentation' instead. Most good writers were satisfied with their writing product and explained how it has been important to express their opinion in writing to sense a feeling of personal growth. The feedback from teachers and friends seemed to have reinforced their views about themselves as well.

Thus, the comparison of the Good and Poor Writers' writing processes revealed that there may be a difference in employing strategies for a self directed memory search, generating relevant and related ideas, categorizing ideas into meaningful clusters, ordering ideas in the text, regulating their comprehension and personal style, and translating their overall schema in the text that makes the composition of Good Writers so much better than the Poor Writers. This difference cannot be accounted for by the competency in the language alone, though proficiency in the language may certainly help improve the quality of writing. The fact that poor writers were less able to articulate their writing process during questioning by the researcher attest to this assumption. On the other hand, Poor Writers seem to be lacking all or some of the cognitive processes mentioned above that may or may not accompany a language deficit. The implications for teaching writing would be to put more emphasis on the planning component, than the drafting and editing component.

CHAPTER VI

CONCLUSIONS

The significance of the present findings is twofold. First, they supported earlier findings in terms of the differences between the good writers and the poor writers in their writing processes, increasing the critically needed empirical research base. Second, they showed that the poor writers' organizational difficulties in writing may be an extension of their difficulties in processing more basic planning and problem solving tasks .

The evidence for the first point came from the thinking aloud protocols, collected during writing, and from the interviews, conducted immediately after writing. The thinking aloud protocols indicated that Good Writers interpreted the questions in a variety of ways to select a topic. Then they generated ideas on the topic and wrote the key words or phrases sequentially. This idea generation continued even when they were putting different ideas into groups. Once they were satisfied with the amount of material and organization of the main ideas, the writers started writing the essay. Poor writers, on the other hand, started writing immediately after looking at a topic, and the essay contained different ideas put together in sentences with very little organization. This finding is consistent with Bereiter and Scardamalia's (1987) "knowledge telling model", to explain the writing process mostly used by the inexperienced writers to generate ideas and text at the same time. The good writers seemed to use this knowledge telling process to generate ideas, but then they utilized the "knowledge transforming model" to organize their thoughts, and plan how they are going to present the topic to the readers. Since poor writers did not have a plan of action, the composition was marked by disorganized ideas, unnecessary emphasis on trivial points, and lack of a structure such as beginning and conclusion etc. The results of the interview pointed to a number of issues. The poor writers did not seem to have the knowledge of the writing strategies, steps in writing,

presentation style, consideration of an audience, and integration of information utilized by the good writers. They attributed their writing difficulties to such aspects as limited vocabulary, restricted opinions, uninteresting imaginations, lack of willingness to spend more time, and off task thoughts. Other researchers (Englert et al., 1988; Wong et al., 1989) have found a similar difference with the poor writers in their lack of awareness of a modelled writing process. There seems to be a strong belief among some researchers that these deficiencies are the results of inappropriate emphasis on mechanical skills in writing instruction in schools (Englert et al., 1988, page 45), insufficient time spent in actual writing (Christenson et al., 1989), and lack of a focus on students' strengths (Lynch and Jones, 1989). When the instructions provided by the poor writers for a younger writer were examined, evidence for a standard writing process was found, indicating some support for a body of research on the facilitative effects of revising some one else's composition on the knowledge of writing (MacArthur et al., 1991). The only departure of our results from previous findings was that the poor writers in this study showed awareness of their difficulties, whereas others reported absence of such recognition among the LD students (Graham et al., 1991). This difference was interpreted in terms of the absence of the LD students' access to the high achieving students' written work and/or a possible self esteem problem of the children in our study.

The evidence for the second part of the findings came from the comparison of the performances of good and poor writers on Cognitive Tests of Planning (Das and Naglieri, 1989), Planned Composition (Ashman, 1978), and spontaneous writing of the Test of Written Language (Hammill and Larsen, 1988), and from a theoretical model tested on these data. The cognitive tests of planning were assumed to measure basic problem solving and strategy use, and planned composition was assumed to measure planning, organization etc. in writing. It was found that the good writers identified by the writing test were significantly better than the poor writers on the cognitive tests of planning, and planned composition. The obtained data collected from 107 students ranging from low average to

superior on the writing test, had a good fit for a model that assumes cognitive tests of planning to affect performance in planned composition, and planned composition to affect writing efficiency. Additionally, writing performance was significantly related to the cognitive tests of planning, and the "individuality" aspect of planned composition involving originality and uniqueness for the good writers. However, it was the "mechanics" subtest that predicted writing performance for the poor writers. Cognitive tests of planning were related to most aspects of planned composition for the poor writers only. These results showed poor writers to be not only cognitively different from the good writers, but more importantly, that difficulties with planning and organization may be caused by deficiencies in planning processes, as measured by the cognitive tests of planning. This finding may have very far reaching consequences on the whole area of writing instruction. Pending replication by other studies to verify the model developed and tested in this study, the shift of the current emphasis in research on the planning and organizational aspect of writing must move beyond the writing context to basic problem solving strategies first and then to the writing process instruction. The PASS Remediation Program (PREP) (Das, 1989; Das & Conway, 1992), based on planning, attention, simultaneous, and successive processing, can be selectively provided to students with specific processing difficulties. In cases of a deficit in planning processing, the child may benefit from receiving remediation in planning first, before moving on to its application in writing. Applications of PREP have shown promise in allied areas such as reading decoding and reading comprehension (Crawford, 1990; Kepron, 1991). It must be acknowledged, however, that further work is needed on constructing the content based "bridging tasks" of PREP, that are derived from the content free "global tasks". Both global and bridging tasks are based on the four processes described above and used to strengthen deficit cognitive functions. The bridging tasks which are currently available only for remediating reading, need to be adapted in order to apply them to improve writing skills. More research is warranted, to incorporate specific skills that are already known to affect writing within these bridging tasks, to evaluate the

efficacy of this method, and to also explore aspects of writing that are yet to be fully understood.

There has been a substantial progress in recent years in research on writing. The emphasis on fluency, syntax, and mechanics of the first half of the last decade has shifted to cognitive and metacognitive aspects of writing in the last half, and appears to be continuing into the nineties (Newcomer and Barenbaum, 1991). In view of the current research and the findings that are reported recently, the following ideas for future research are proposed. The first and foremost task is to replicate the present study to ascertain the implications of the basic problem solving skills, as a basis for further evidence of a deficit in the utilization of planning and organization in writing. This research may have to address at least two different issues; (1) to broaden the scope of the cognitive tests of planning by including more lower level tasks to increase reliability, and adding higher level problem solving tasks, such as "tests of strategic planning" (Das, Misra, Mishra, 1991), (2) to evaluate the remediation training program based on the Planning-Attention-Simultaneous-Successive model. Research in both these areas are in progress and the results of these studies will be a valuable addition to our understanding of planning in writing. Second, we have absolutely no data yet on cognitive and metacognitive aspects of writing for both poor and good writers in a longitudinal perspective. Maintenance and generalization of the instructional methods to improve writing must be studied for a period of three to five years or more. It will be interesting to see whether poor writers simply catch up with the good writers following remediation, thus confirming the deficit model; or whether they follow a different pattern, built on their strengths to cope with the demands of written work. Critics of the "deficit model" in special education would be happy to see an end to this 'medical model' perspective in education. For example, Poplin (1984) stated that "we spend millions of dollars and hours looking for deficits, defining them, perseverating on them, imagining that we are exorcizing them, and sometimes even inventing them to rationalize our activities" (page 133). Third, the motivational aspects of

writing are very rarely investigated. Studies must address different factors affecting student motivation and ways to increase student interest in writing activities. Use of computer programs etc. have shown some beneficial effects in this area. Fourth, studies are lacking in the area of teacher attitudes and expectations of students experiencing writing difficulties. It is unrealistic to expect any positive change without incorporating these variables in any instructional or research paradigm. Fifth, a more comprehensive test of writing is long overdue. Such a test should take into account multiple writing samples of various topics. Scoring criteria is another issue which needs to be settled as soon as possible. Without a standard measuring device, the use of holistic rating of compositions based on an overall impression is sometimes vague and can lead to low interrater reliability and render limited utility for other researchers.

Above all is the issue of understanding what constitutes writing competence and what approach to instruction is to be pursued. This is rather a more philosophical question, but nevertheless a very important one. Mosenthal (1988) has raised this question recently by presenting three approaches to progress: a literal approach, an interpretive approach, and an emancipatory approach. A literal approach to progress views exceptional children who are poor writers as least desired in social evolution and gifted children as most desired, since they are more likely to assimilate and uphold the cultural values. An interpretive approach is based on the assumption that both poor and good writers provide meaningful experiences in their own ways in a democratic society. Finally, an emancipatory perspective provides a view which is critical of the very basis of distinguishing a very poor from a very best writer. According to this approach, the goal of teaching is to recognize experiences of all children regardless of their individual potential; therefore the educational system should change its orientations to foster that environment. Thus, writing competence will have a different meaning depending on what approach we are willing to pursue. As researchers, by providing a best definition of writing, we endorse a particular perspective despite our good intentions to keep the debate on the philosophy of eduction

alive. Mosenthal nicely puts it as the educators' "freedom of choice but not from choice". In determining what is best for the society neither Mosenthal nor the present writer can provide an answer to settle this issue.

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APPENDIX A

Dear Parent:

We would like to request permission for your child to participate in a research project at the school. We have already received permission from the Edmonton Catholic School District and the Principal of your child's school to conduct our study.

The major purpose of the project is to determine planning and memory processes involved in essay writing. Various tasks that children enjoy will be administered to them to assess writing, reading comprehension, spelling, planning and memory. The results of the tasks will be helpful in understanding why some children may have problems in written composition(Writing passages and essays), so that more appropriate instruction can be designed.

Each child will do the tasks individually and also in groups with the researcher. The total time involved will be one to one and half hours over a maximum of two sessions during April, 1990.

The results of the study and any additional information will be kept completely confidential. Group scores will be presented in the final report and individual names will not appear or be used any time during the project. However, if you wish to know about the results of your child the researcher would be available for consultation. Participants will be free to opt out any time during the project.

Please complete and sign the attached permission sheet and ask your child to return it to the teacher as soon as possible. If you have any questions, please feel free to call Rama Mishra at 492-4505 (office) or 439-6096 (home). Thank you very much for considering this project.

Researcher: Rama K. Mishra, Ph.D. Candidate

Supervisors: Dr. Robert F. Mulcahy, Professor
and Dr. Thomas O. Maguire, Professor
Department of Educational Psychology, University of Alberta.

PERMISSION SHEET

(RETURN TO THE SCHOOL PLEASE)

PROJECT TITLE: "Attributes of Planning and Memory in Expert and Novice Writers"

RESEARCHER: Rama K. Mishra

Name of child_____

Name of School_____ Grade_____

This is to certify that I here by give permission to my child to participate in the study conducted by Rama Mishra, Ph.D. candidate under the supervision of Dr. Robert F. Mulcahy, Professor and Dr. Thomas O. Maguire, Professor of the Department of Educational Psychology, University of Alberta.

The purpose of the investigation and my(child's) part in the investigation have been explained to me and I understand the benefits of this research to the planning of appropriate instructional design for effective writing.

I understand that any data or information will remain confidential with regard to my identity and the child's identity.

I understand that I can ask for clarification at any point in time during and after the investigation regarding the test results and its implications.

I understand that my child will not have any physical or psychological injury in taking the tests and I am free to withdraw my consent and terminate my child's participation at any time.

_____ _____

Date **Signature of Parent or Guardian**

APPENDIX B

INSTRUCTIONS FOR TEACHERS

DISCOURSE RATING:

Using your standard grading procedures, assign to the student a 'Grade' that represents your best judgement of that student's overall ability in written discourse. The term discourse is intended to include English Composition ability generally: the ability to organize thoughts, use appropriate rhetorical strategies, use supporting material when needed, develop a thesis, generate noteworthy ideas, make effective transitions, maintain coherence and unity etc. Please note that your rating on discourse should not be influenced by the mechanics (grammar etc.) of the English language.

Please judge a student's writing skill on a seven point scale as:

Very Superior	-	7
Superior	-	6
Above Average	-	5
Average	-	4
Below Average	-	3
Poor	-	2
Very Poor	-	1

Note: You are free to assign a decimal score such as 4.5 or 5.8 etc.

APPENDIX C

PAGES 134 TO 137 REMOVED DUE TO COPYRIGHT RESTRICTIONS

Record Forms for Tests of Planning (Das, & Naglieri, 1989)

APPENDIX D

TABLE REMOVED DUE TO COPYRIGHT RESTRICTIONS

Planned Composition Rating Scale (Ashman, 1978)

APPENDIX E

The notes below are only a guideline and are not followed verbatim. Necessary changes were made during administration as required.

Begin first session with an introduction to block design task:

See these blocks? They are all alike. On some sides they are all red; on some, all white; and on some half red and half white. Turn the blocks to show the different sides. Then say, **I am going to put them together to make something with them. Watch me.**

Now you are going to do more designs like this example. But I want you to tell me everything you are thinking as the design is being constructed.

You are a co-investigator who is assisting me in examining the processes involved in writing activities.

Thinking aloud might seem silly at first, but with practice you will get used to it and it will be fun.

Just like a sports broadcaster who provides a play-by-play account of a sporting event, you are requested to report each of your thoughts as they occur.

(start recording as the S starts working on the blocks.)

Probes: **What else are you thinking about ? How are you thinking about that ? Anything else ?**

Part 2: **That was good. Now tell me your favorite sport. Pretend you have to tell a six-year-old how to play the game. Tell me everything you think he or she would need to know in order to play the game.** When verbalizations about the steps in the game were vague, incomplete, or missing probe for further clarification.

Below are a number of observations and questions. Select one (1) and write an essay in which you reflect on what is said and state your own viewpoint. Choose, not more than two to three main points to present your argument. **Plan as much as possible before writing**, to select a topic, to gather ideas on the selected topic and to finalize the points to be discussed in the essay. Feel free to make notes during planning. **Think aloud on anything that comes to your mind.**

1. Does watching television make it more difficult to think independently ?

2. Should children be able to choose the subjects they study in school ?

3. Do young people today face more challenges than what their parents faced ?

4. Should there be age limits (a minimum age) on watching certain movies, driving, and drinking ?

Probes:

1. What were you thinking and doing while you were actually writing the essay ?

2. How did you go about choosing this topic ?

3. How did you determine that the points you have given are the best ?

4. What would you do if you were to do a different topic ?(Would you do the same thing if you were to do a different topic ?---self evaluation)

5. What do you think good writers do when they write ? What do you think poor writers do when they write ?

6. Do you think you are a good writer ? Why ?

7. What would you tell a student who is 3 years younger than you as to how (s)he should write a good essay.

Table 17

Interpreting the Questions and Choosing a Topic: Good writers

ID #	Statement and/or Explanation
035	Read the 4 questions and instantly decided # 3. Referred to # 3 as " It's a lot like what I go through." Other questions did not appeal her. "(#1) watching television.. does not interest me. Then children should be able to decide....(#2) it's just school and age limit (#4) kind of get too deep into laws. so I think #3 is the way to go." (why did you choose #3?) "this is easy to relate to where I am and I have gone through" "It is so easy to relate to. We think about that all the time...parents whining..." "Challenges (#3) is so easy to write about, T.V. (#1), and children choosing school (#2) is not."
039	Decided #3 instantly. "I will do #3 because it relates more to me". (why did you choose #3?) "I like #3, because I think it is a good topic to write about. It's something that deals with me. Like #2, I know for sure it will never happen that way. Even if we are allowed to change our subjects and stuffs like that it just I know the schooling is right the way it is. T. V. (#1) is like a boring subject to write about. Then with minimum age (#4), because there is already been minimum age put down on movies, drinking, and driving. No. 3 appealed me most because it was really the one I knew like a question. Two and four, you really could not do anything about it."
041	Talked about the problems faced by children and parents in different areas as the focus of his essay for #3....."they are fresh in my mind because we talked a lot in school and home." (why did you choose #3) "because it seemed to be an interesting topic. Something people have been wondering about for a while....Parents think that we have it easier, but I think that we have it harder than they do."
053	"That's (#2) a good topic- has many different points. Others are hard to explain." (why did you choose #2?) "because it's mostly about educating yourself and decide what you want."
054	Examined each question and talked about it. Discarded #1, because it has been discussed a lot already. No. 2 has only one side. No.3 has many sides, physical, emotional, and social challenges. No. 4 has lots of topics, but lot of people have talked about it. So decided to do #3. (why did you choose #3?) "that's the one with most widely varied opinions. Other ones, there is really only one main opinion everyone has."

109 Read the topics and evaluated her own view on each topic successively and then finalized on No.2...."Does watching television (#1)....well I don't know if I would write that one, because I think you can still think independently if you put your mind to it. Because I do my home work infront of the T.V. Should children be able to (#2)...No, I don't think so. Mainly because we don't know what we are talking about. Do young people today face (#3)....I don't know if I could write that one because I don't think I really know what our parents faced. so, I don't think I can compare. Should there be minimum age (#4)...Hum, kind of a tough one too. Hum... so I pick one of these eh? Hum, 'think I am going to take Should children be able to (#2)...because I think that's the one I know the most about, the subjects and everything I have to do in school."

(why did you choose #2?)
"I think I could relate to it more. You know with subjects in school, and being a kid and everything. And with the other ones I can't really relate to it because I haven't really, like I could relate to the television one (#1) but I don't think I have very much to say on it, not really an opinion. But the second one I think I had an opinion. The other ones, I don't know I didn't really faced them, so I can't really write about them."

202 "Does watching TV(#1).....I don't know, it's kind of stupid. Should children be able(#2).... well that's interesting, may be. Do young people(#3)...yah, that one is good. Should there be age limits(#4)... Anh, well, first I don't really like the last one, not really. But, should children(#2)...that one is ok, because certain things that children should and that parents should decide. But, I think I would choose #3, do young people today.... I would choose that one because, my answer is, yah they do of course today I think. That's like my opinion. .....Parents faced challenges like smoking, and drinking and even some drugs, not very much though, but some drugs. In children all have this today, except way heavier pressure load. But the most challenge I think today is education, very much. ....(She kept on expanding on the topic to come up with other points)."

(why did you choose that one?)
"Anh, I think mostly because of one of my points in my essay was education, and the question is do young people today face more challenges.. Because education and stress is so great today, me and my brother are trying to get an education and my mom keep saving money to get an education for us and it seems like almost all the parents, like kids I talk to, are going through this. So there is like lot of pressure put on us. So when I read that I was thinking about my parents, they had to go back to school and stuff like that. So I was thinking that, there is more challenge for us today than before. So it's sort of like, whenever I pick a topic I sort of like, usually I pick it because, it like hit something personal to me. That's usually why I end up choosing it."

219 "...I have narrowed it down to two, that I would possibly like to think on or I feel it looks like important. They are #3 and #4, do young people.....or #4 should there be... Well I think #3, because I usually, I argue with my mom a lot about what's happening today and how she compares us to when she was a kid and all that. So I'll probably pick #3."

(Why did you pick #3?)
"Well, when I looked at the other topics, I thought, well, they just did not...ideas didn't really come to me as quickly. I didn't really have too much opinion on these

other things. These two (#3 and #4) were equal. Um, I had lot of information I could have put on both. But I felt, well, this to me is more important, I guess you could say, than this one was. Because, this was about like us and our parents, which seems right now like in the 90s it seems to be such a great influence on families and how the parents should get along with kids and how we can communicate with each other. So I thought, well, that was more important than the age limit and all that, because basically all those have been set for us already."

222 "Does watching television(#1)... it's harder for me to watch TV alone, because when the sitcom comes, when they talk and people laugh, I don't find it funny. But when I am watching with somebody else, I usually think it's funny eh. So I find it more boring to watch it by myself. Should children be able to (#2)....No, because you wouldn't know what to choose. And if we were to choose all our subjects, we wouldn't want to study hard, and wouldn't learn as much as we learned now with the teacher and school board picking us subjects. Do young people(#3)...not really, because my parents are older and when they were younger they used to have to work a lot and they had more responsibility with the house and getting married and everything then we do today. We don't really have very much responsibilities to think of those today. Should there be age(#4)....On certain movies sometimes, because we don't really learn a lot from watching movies. But for driving and drinking, there should be, because you have to be at a responsible age mentally and physically to drive and drink. Because, drinking does harm to your body, and driving could do harm to you too. I have to choose one of these, right?... I think I am going to do the one about children being able to choose their subjects they study in school, because that's the one I have the most points on. I think we learn more about what we are studying if somebody else chooses it for us. Because, we shouldn't have very open opinion on what we study, it will make us lot less responsible and we wouldn't want to study too much, so we wouldn't choose very many things. And this way we have some responsibility and some things that we have to go along with. I don't really know how to explain it but we have like a guideline to show us what to do."

(why did you choose #2?)
"Well, because onetime in religion class we started to talk about that with our teacher. We had a discussion and I was bringing up some of the same points that I brought in the essay and I was thinking that I knew about that one that I did about the other ones. And it's the one that I had the most things on."

Table 18

Interpreting the Questions and Choosing a Topic: Poor Writers

ID #	Statement and/or Explanation
003	Took a long pause after reading all the 4 questions and mentioned that it's difficult to think aloud while deciding a topic. "...The #4 about the age limit on drinking and driving etc., I think there should be, because unless the young kids will do what ever they want. So I don't know, it does not appeal my interest. Students face more challenges (#3)... I don't think I will do that one, because I don't know what my parents did. Children should be able to choose subjects at school (#2), I think I will do that one, because I think we should be able to pick what we want. Does watching TV (#1)..I think watching television does make difficult to think independently in certain subjects, but not all the time. So probably, I will do #2." (why did you choose #2?) "Because you are sure about it like all the time. Kids always go and parents always say you take this. I knew the most about #2 and #1, but I just chose #2, because I am here most of the time and know everything that goes on here."
004	Read all the 4 topics and picked #3 almost instantly. "...My parents of my age, I guess they did not have to face like what we are facing like diseases and more peer pressure than they did." (why did you choose #3?) "...we have more to think about than our parents did in our age"
005	"#2 is kind of boring. No.3, do young people today face more challenges..hum! that should be reasonable. No.4, should there be age limits..., well the first one I kind of like because I always watch TV. No.2, I don't really like, because I hate school. No.3, well, I hate talking to my parents. No.4, it's kind of a good topic, because some of the view points are being faced. So the topic is going to be..hum! trying to pick. It has to be 1 or 4, so I will pick 4, it should be reasonable ok. Oh! the reason why I picked #4? The reason I picked #4 is because out of all four of them the most question that interests me, because I go to the movies and depend on driving and I always like to try drinking, but always interests me how I would put things if I was in that situation. So that's why I picked it." (why did you choose #4?) "Because this topic is (important ?) today and more faced. But if put that into survey, kids won't talk about their parents nice. Kids don't like about school very much either and TV, well they still do it anyways, so why bother?"
011	First read all the 4 topics. "..I think I will go with #4, no I think I will take should children be able (#2)... I am probably going to disagree with this. I don't think children should be able to choose their studies, like may be the complementaries, but not the cores, because they need those. And, I will put those view points (down in my notes). I probably like use every view point, from the child's point of view and the parent's point of view, and the teacher's point of view if they should

or not. But, I am pretty sure that child's point of view would be that they should. But I think that adults will think differently. The parents might not want their children to choose their own studies, because they know that the children are only going to pick fun games, art or gym or something like that. So parents know that they need extra knowledge for move out or something. Teacher, I don't think, they have much influence. They just teach. But, I would say that they think that the parents or the teachers should be picking up the subjects or the Catholic School Board or something should be picking up, not the children, because they don't know too much like, how is life going to be. If we are talking about 5 or 6 year olds or even 7 year olds, they will probably think that I don't want to do this stuff and that's how they are loosing marks and stuff. But the teacher should influence more on other courses of studies, so they will be more interested to know about the stuff. But that's going off the subject, I don't think I should put that in. Uhm!, I am not sure....Uhm, parents and teachers, they probably have the same point of view and stuff, but they don't always agree. Because, some teachers, they just think some kid should, no I should not put that either. I am not sure, I guess that's like...I will get writing my essay and probably going to get more ideas. That usually happens."

(why did you pick this one?)
"Because, I don't know, I think like kids are too young to make decisions in school. And it's like the subject was school. We are having exam soon, so I am kind of thinking about that. and it's kind of stuck out."

015 Looked at the topics and started writing instantly.
"Children should be able to choose (#2)....I just start writing. I don't think. I just write."

(why did you choose that one?)
"Well, because that's what they should be, because there is lots of subjects in our school that I really do not want to be taking, like math, science. That or #4, that's a good one. I don't know, because right now we are in school, so I pick #2. If I were at home I would pick #4. Because it involves on wether or not we should be able to be watching movies at an age limit, driving, and drinking."

017 "..like the first one...ok, fourth one. Well, there should be an age limit to what you should watch or how much you can drink or drive. Because if you can watch movies at any age, they could go to movies that has bad stuff in it. If you are using high ball and driving you could accidentally kill somebody drinking. A three year old or ten year old drinking may not be able to handle it, do something to harm other people."

(why did you choose #4?)
"I think there should be limits when you watch movies, drinking, and driving. I think the other ones weren't as important. We more talk about #4, watching TV... so I chose #4."

028 "Does watching Television (#1)....I don't know. Should children be able to choose (#2)...Can't tell. Does young people face more challenges (#3)...hum! Should there be age limits (#4).... No I don't like that one. Ok #3. It's kind of hard to think aloud while you are writing."

(why did you that one?)
"I am not too sure. I did not like the other ones."

111 "I think I will choose the one, children should be able to choose (#2).... Well, kids should have a right to learn what they want to, instead what other people say they should learn. Ok, well, some kids might like different things than other kids, say one kid likes sports more, he could take more in sports stuff than LA or Social. He should have like a basic LA, Social stuff and more options and focused more on what the kid does. Except, one person likes to a poet or something, they could take extra courses in poetry and stuff. Kids sometimes don't feel comfortable learning something (if they don't like)."

(why did you that one?)
"Well, sometimes you have problem in having to make choices in subjects. You probably have fun in. So, I think having fun in school is like it's easier to learn when you have fun and stuff. The kid would like probably, all kids like to have fun, so that you can learn more and have fun at the same time."

208 "I'll probably take as a younger person I will pick #3, Do young people today face more challenges... Because I know the challenges we have to face, like probably could give good opinion on it. First of all, I will try to think of what kind of challenges we have, and what kind of challenges our parents have. The younger people today faced more pressure. They have to have better grades. They are expected to do more. The older people, they had to do more stuff for their parents, chores. I couldn't think of any more....."

(why did you choose that one?)
"Well, I find with my experiences being younger I could compare what I am going through now, about I heard about my parents or older people going through when they are kids.... I am sort of taking my side because, I know the challenges."

318 Read all the topics twice and stopped to think, read #4 again, thought about taking #1, then changed to #2.
"I will probably take this one (#1), because something that people do everyday, most people would do every day, watch TV. (read the topics) I will take that one (#2), because in junior high you don't really get to choose what you want in grade 6 or lower. But you do get to choose in junior high, so it's a big change what you are taking.... I would agree, because it's not what's the parents want or what's the teachers want, it's what you want for yourself and your education and what you want to be learning. It's important for people, for young people, for children, to be able to choose what they want."

(why did you choose #2?)
"Like from grade 6 there is a real change, because there is a lot of things to choose from, different courses. I thought it was important for me to choose the things that I choose. So I just wanted to explain to the parents and anybody that it is important for them to choose what they want, not what the parents want."

321 "Does watching television (#1)...I don't think I'll do that. Should children be able (#2)....they should, they are the people who are going to choose which they feel better in. Do young people (#3)... Um! it's sort of even, like I think we have the challenge of little bit more bills, because we've got to pay rent, electricity, which some of them didn't have until little bit older. And we have car, we have to think of what kind of car to buy. We have little bit more stuff, we have like nice TV. Should there be age limits (#4)... Yah, because some movies are based on violence and sexual scenes and stuff that make a 12 year old or some one younger than that

would take it little bit wrongly, decide to do the same thing as seen in the movies. Driving, well, like I don't really have any opinion on that, there is an age limit already there, why change it now as long as you've got to have some kind of responsibility. They usually test that age to see how responsible certain people are at that age and decide if that age group would be able to handle the responsibility of driving. And drinking, yah, because you've got to be little bit more responsible than driving.... I will probably take 4."

(why did you choose #4?)
"Anh, basically it reflects more on me than the other ones do."

Table 19

Statements Emphasizing the Importance of Audience

ID #	Statements
054*	"this one (the essay for #3) I wrote for parents. I thought it is important because they have so many misconception about our generation. (such as) why you are listening to that loud music or like you guys don't have it nearly as hard as we did. But I think they are wrong in saying that. That's why I wrote it for them...I asked the parents to be more understanding of their children and see like on the title it says, 'You had to walk five miles to school?' Lot of parents say that, right? Then at the end it says please don't tell your child you had to walk five miles to school in freezing snow uphill both ways. So it's sort of like ends in a joke story. Does not leave the reader feeling serious about this...But if I were to write for the teens probably I would say, be more understanding to your parents too."
109*	"...like if I were to hand that person my essay, I would like to know what that person would like to be reading. If the person does not want to read something, and it's (the essay) totally boring, they just don't want to see it. ...My audience, I pretty well said like writing an article in the newspaper, (for the) everyday person who reads it...."
202*	"when I write, I always think of like a beginning paragraph with something to make people interested and that's the first thing I think about, because I have to catch the audience and I try to make it as close, not sophisticated or anything, but as close to your heart as you can get.....And the very last sentence, like either say something new that would like bring out their idea or just finish off what you said or leave an impression on them."
219*	"I think of who could possibly be reading this, which is usually the teacher or my friends or just for me. (would they be different?) Yah, I think it will definitely be different, because for certain people I don't know, you kind of write differently. This one (the present essay), I don't think this would be very different for the teacher. For my friends, I don't know, I think it would be little different, but everything would be still the same. It's just different wording, phrases, but that's basically it."

* all from the group of good writers (n=9)

Table 20

Statements Concerning a Good Writer and a Poor Writer

Poor Writers

ID #	Statement
003	"Good writers know what people want to hear and they know what to write about. Bad writers don't put it the way good writers put it. Bad writers don't have a very good vocabulary . They put a different opinion. Good writers can write on and they have more opinions. Good writer goes and gets all the information. Poor writer may not do all that."
004	"I guess good writers research the topic that they are writing about and have all the facts and make it interesting. Other writers may just write down their opinion and not look into other people's opinions or facts about that topic."
005	" ..they (good writers) emphasize the topic. They put different parts together and make a strong view point, so the readers can read them. But the bad writers, they just flop it all up...."
011	"Good writers, I think, they gather a lot of information that deals with themselves and other things too, right? So (they) can put everything in a certain spot, so does not sort of look disorganized. For poor writers, I think, that's because they just write, they don't really plot anything."
015	"They (good writers) have good imagination.....I should say that probably they are talking about their own life. Basically, I feel that the interesting and good topics are people that have good imagination"
017	"Good writers have good ideas. Bad writers don't have any. Good writers are able to put it in a good way like paragraphs. Bad writers might put different paragraphs and change the subjects lots (a lot). Good writers stick on the subject and make it interesting."
028	"I think they (good writers) take more time to look at it (the topic) before they start to write I guess....They look into the topic they want to do, write down, or may think about it. Poor writers don't take time to read about it, think about it and stuff like that."
111	"Poor writers probably don't use exciting words and they don't emphasize things much, like using adjectives and stuff. And the good writers probably use a lot of adjectives and make it using different kind of ways to get their point across. Good writers probably ask people like how they would do it and then combine them different way or they have little bit of each and stuff. Bad writers probably would just do it really fast and no effort at all, just, oh it's not really important kind of thing."

208 "well when they (good writers) write a story they must look over couple of times and see if they can fit in any interesting stuff like actions and (things) people are interested. You (good writers) can get view points of other people. I don't think the poor writers, they don't look over their work enough and sort of in a hurry to get it done. So, like with more things you want to say it take longer time to write stuff. So, make sure it's all right 'n, the poor writers they kind of just write it and think it's good."

318 "First they (good writers) organize their thoughts. They write them down. Something pops into their head or thing that's important they write it down. (because) I don't know, smarter or better at writing I guess. Smarter people I think have better ideas....they (the poor writers) have ideas but they don't organize, they just start writing from when they thought of it, they just write it down, like straight from their head on to the paper until they are finished."

321 "They (good writers) put all the facts that make you like they put the facts and stuffs that they are writing about in such an order that makes you want to read on. (Bad writers) just bounce it up into sentences and it doesn't really make sense and there is no excitement and makes it boring."

Table 21

Statements Concerning a Good Writer and Poor writer

Good Writers

ID #	Statement
035	"Poor writers do not focus on what they are writing about. They don't think hard enough or put themselves in a place or person they are writing about. They just write about it. Good writers put themselves in a place and use their imagination"
039	"...if a person is caught in the middle of the subject like question number 2, then the reader would not know which side you are on. The one that totally supports one side makes the writing good..... Sentences that makes sense and topics that flows, not jumping back as you go down (make writing good)."
041	"(good writers) express both sides and all the good and bad points for each side and express everything about the topic. Bad writers do not express both sides of the story, do not find information on the other side and express one side they believe in."
053	"Good writers write about topics they like and what has happened to a friend or in their personal life. Bad writers are interested in stuff that makes money and they really don't know what they are writing."
054	"The difference (between a good writer and poor writer) would be known information, statistics, personal experiences or little stories or examples from your own life. Then also being able to describe, use description a lot, so does not leave the reader guessing about what you mean....Good sentence structure...."
202	"I think, they have in their hearts, first of all to be a good writer. They have to want it to do it. If don't want to do it, you won't write something good. (poor writers) don't take it seriously, and take it to heart. They don't see the good in each topic, like for every topic there is got to be something in a topic that will relate to you and your audience or to your readers. But if they just look at it from outside then they won't do a good job."
219	"Well, I think the good writers, they take their time and they organize all their information and they think about what they want and how they want it to come out and express it to the readers. Unlike the other people who really don't put much thought into it and they feel, well this is how I feel and they start writing, they don't really organize their information. Everything is just a jumble and just put it down on paper."
222	"I think, good writers should express their feeling, even if they think it might be wrong. They should speak up fairly on things they believe in and search inside your head about the points that you really believe in. Like before an essay talk out loud or even on paper just think about anything and just keep writing it, even if it's not related to the topic. Because even if it's not related you can sometimes pull

something out of that. Then after I pick my points, I sort of try to put it into my own words, like into sentences and after that I try to expand more on it and get some smaller points and write it into paragraphs. ...I think they (poor writers) don't use the words, like the proper words and repeat too much. I don't think they can dig deep inside of them to find what they are thinking. Because you have to be able to say what you think and some people can't do that.... I think, they sort of know what they want to say, but like I said they can't somehow put it down in words. Because, lot of people have good points and good ideas, but just they can't express themselves openly."

Table 22

Suggestions to the Young Writer as to How S/he Should Write an Essay

Poor Writers

ID #	Statements
003	"I will tell her what she likes to write about, like you can't make a kid write about if they don't like something. What ever you like write it. Then put down points as many as you can think of and then mix them all up into like organize them into conclusion, body, and everything and then do a rough copy."
	".....I do proof reading but I don't do points. I just start writing if I like the topic. If it is a hard essay I do points."
004	"..may be just use her opinion and think about what other people may think about that opinion and then write about it I guess.... If she knew the topic research it , like look into a bit and see what they say about it. Write a couple of points or something to think about it in your mind and then start writing."
005	"well, I will just read all the topics that you know, just things that what she likes to do stuff like that. Then I will tell him to think of the ideas that what best put on that issue and pick up the view points that best describe the issue. Then put it on paper just skim like rough copy and read over and see if it sounds good or makes sense. And if does write it."
011	".....I would just tell him to first get all the points if you are not sure, then write a rough with that. If you are still not satisfied with the rough like keep on doing it, like find every little mistake and then fix it and do it over. Finally it will get better."
015	"I would basically tell her to pick a topic that she felt comfortable with it.... Any thing she wants to state her opinion on it and did not know how, so that would be a good way to do it.... Opening statement and then I would tell her to write her opinions down, about her main points and then I would tell her to write her conclusion."
	"(do you do like this?) Some times, if I know what I am talking. (notes?) I just start writing"
017	"I will tell him or go with him to the library and get lots of information and put it into....(how would you decide a topic?) I will give him two choices. (where will you get these choices first?) From the subjects I have from school. Get some books from the library, read it and write the essay."
028	"Tell her to look it up, like make notes on it. Ask what interests her the most. Then get her to get a book on it. Read the book and take notes. Then proof read your notes..."

111 "I would say that try to choose the topic that you are interested in, something you know little bit about it and can use your own ideas and see if you like that topic (so that) you will have fun writing about it. The kid will probably like, say he chose a good sport, he can write may be about sports in general or about like a main sport. Then I'll tell him to write all his ideas down and then choose the best one and then make sure that like say he writes points down and some starts writing paragraphs and stuff and then he can ask people to go over and make sure that it sounds write. Then get the people to like read over the final copy, the changes and stuff."

208 "Well, I will probably sit him down and just ask him what he is interested in. And if he is interested in sports or something, then I will tell him to tell me about it. Then he gets to the points, I will just tell him about it and then he can write about it. Look over it afterwards, just make sure it's right and everything. Then write a rough copy, so that you can change stuff and write a good copy."

318 "I'll ask him to write down some of his interests and what would you like to do or like, what are her hobbies or something. Then from there, I'll tell him to start brainstorming and write down like pick one topic, write all the things that are popping to your head, write them down. Then go to the next one (topic) that you wrote down, brainstorm from there, write down all the ideas that come to your head and if you like one the most, pick that one and start brainstorming more. You take one idea you chose, start brainstorming that one and keep branching off. (any structure?) I'll tell him to start off with a short introductory of what the topic is what some of the main points will be. Then, organize all your ideas in brainstorming ideas and organize them into separate paragraphs. (conclusion?) You write a conclusion about, then you summarize all the main points and get the main point across again (to) let the reader think about what you wrote."

321 "Choose something that you know about or interested in. Like basket ball, base ball, something interesting. Then when you start writing the report, you get all the facts together and on a sheet of paper like in point form. You don't have to write whole sentences, because it takes too much of your time and then once you start writing the actual essay, put in a fashion that it is interesting as well as it look interesting, it feel interesting, it be interesting and it would make the reader want to read on."

Table 23

Suggestions to the Young Writer as to How S/he Should Write an Essay

Good Writers

ID #	Statements
035	"...put themselves in a place of the person they are writing about, how it would affect them and in a good way or bad way..... If you have a strong opinion about that, something happened to you before or know something about. Think about your own experiences. Gather information and form opinion about that."
039	"pick a topic that they like, dolls or horses. I would ask what they like. Then I would tell them say horses, write as much as they could write. Then go back and read through and see if it make sense. It's almost like brain storming we go through. Then go back and rewrite it all over again, all the words, sentences with paragraphs and stuff. Read, may be even twice to see punctuation, spelling, commas and then make the good draft."
054	"write about something that is close to your heart or something you really enjoy doing. You don't necessarily need to know a lot about it. But if you like it, you will want to research it, you will want to write a good paper about it, you will want to talk other people about it. So do something you enjoy, or you would like to do. ....I will leave that intro and closing paragraph for last. I will write my body first and then once I know what the body shaped out to be like, I can write a better introduction and better closing. Once you write your introduction (first) you are kind of stuck to what it says....Introduction, I write it to like the readers appetite, to get them interested. If they don't like your intro, I don't think those will set it down. If the titles don't catch you, you are not going to set it down....I will write the body first, then intro, then the conclusion. Conclusion could be the continuation of the intro, summing things up or it could be a way for the reader to get other information or get involved in what ever the topic was. (In my essay) I asked the parents to be more understanding of their children and see like on the title it says 'you had to walk five miles to school?' Lot of parents say that, right? Then at the end it says please don't tell your child you had to walk five miles to school in freezing snow uphill both ways. So it's sort of like ends in a joke story. Does not leave the reader feeling so serious about this."
109	"First, I will have to pick a topic that she can relate to, she has something to write about. I'll probably ask what do you want to write about, like not what you want people like to, but what you want to write about. Because if you are writing about the subject you have no clue on, half way through like two sentences you will say your whole thing and you have nothing else to write. So I will kind of tell her write what you want to write. Then I will tell her to do like a prewriting page, right? (to) list down your thoughts. Kind of get them in order in your head and everything, what you are going to say. Then I will tell her to do like first draft and then a second draft and then a third draft, your final draft. But sometimes you don't have to do that, I mean if you said what you want to say and feel like you are doing in a good way, you don't really always have to do all those draft. But that's what I will

109 (continued)
tell her to do.....I usually write draft. I go back and check. Only if it's an opinion or something I sometimes make one draft. May be then I go onto a second draft. I usually do two drafts. First and then revise it and revise it again and go on to my good draft. Then if it's an opinion I usually just write one, don't make many changes and then I have to rewrite it again. So why write it second time."

202 "..whenever I try like poetry or reading, something like that I always pick something that I feel strongly about, like in my heart. So if they were to write about something their own, any own topic, I will tell 'em to choose something that they like had in them. Like if they love dogs or something to write about, they will love for a dog, not just like what dogs look like, but not to go out side, but to go like within the readers, like so the readers can like feel it inside not just like feel with their eyes. (anything else?) To not stop it, like one idea, to like start writing down your ideas as fast as they come, like even if the spelling is bad, just take a piece of paper and keep writing down everything that comes to their mind as fast as they can come and when they are all finished, all their ideas are like drained of ideas, then go back to grouping them together and then see which one idea catches their eye. May be ask for a different opinion like your each title grouping and then what catches like the readers eye. Then write about that too."

219 "Well I would look at the writing process that we have been taught in the class to follow. First if she needs the topic for her to brainstorm just write down anything that comes to your mind. (how to choose a topic?) Just brainstorm. Just tell her to think about anything that comes to your mind that you could write about, whether it be sports, friends, the weather anything like that or like just family, then brainstorm on that. Then afterwards for her to tell like narrow it down from what she had picked and then from there pick a topic that she feels comfortable about writing. And from there I would get her to brainstorm again about that topic and when she thinks about that what comes to her mind and for her to write all those down. And then from there group those information that she has, group them into like certain things that are if it were sports like could be down to like team, team work, independent work, drill, games and practices and she could group them into different categories. Those categories, if you don't like some of them you could take those out and then put into paragraphs by forming sentences. Then form there join the paragraphs so that they flow together smoothly and they are not just cut off and everything. That she have to write introductory paragraph to introduce to the people what it is she is writing and why she is writing it. And she do that most likely first, then she put in her paragraph which she did. And at the end she would write her conclusion to sum up all she has written."

222 "To think a lot, and brainstorm, put their ideas down on paper even if they are not related to the topic. Just write anything for a long time and concentrate on those points and then try to pull some information, look for a key word or something and pull some more information out of that and just keep expanding and expanding more and put it into your own words and just mainly express your own opinion about the subject. "

Table 24

Self Evaluation Statements by the Good Writers

ID #	Statement
035	"I guess I am a good writer. I can put words in the right place and have a large enough vocabulary that I can use in the right way and know what to talk about."
039	"If given the time to go back and take my time writing I think I am a pretty good writer. Because I know how to state my opinion and give lots of things to back it up."
041	"I guess yes (pretty good)"
053	"not bad"
054	"My first copy, no..... But when I have done my whole thing (essay), usually I feel that it's pretty good."
109	"I think I am an o.k. writer. I am very opinionated. And then when I write I tend to bite peoples heads off and stuff like that. I don't know , may be I am bit too dramatic I guess you can say. But I think I am an o.k. writer. I don't know about like stories, I can't really do that."
202	"...if I am given time, then like any dictionary, thesaurus, I can like think a lot about it. I think, I can do good on the subject, but sometimes like if I am in a hurry (I am a) bad speller, bad grammar. I think I am just average if I am in a hurry... I like poetry the best. But I think everyone got the potential. I think it's just your ambition , like your will to do it, like how much you have got in. If you really want to do something, I think everybody can be a good writer, honestly. That's what I think."
219	"Well, before this year I thought I was like, I could just get things done, because it had to be done, so my marks will be fine. But this year, because of the teaching and the things I have learned to do, I feel like I have grown as a writer, and I can do well, I can do more than what I did last year. And I think that my writing has improved from last year. Well, I might get better later...I think I am probably better at writing like this where I persuade or I come out with my own opinion."
222	"From the marks I get in language, yah (I am a good writer). Because sometimes, it's like on the topic that I know about. I try to choose what I know about and I sort of speak more freely about it, so I have more to say."

Table 25

Self Evaluation Statements by the Poor Writers

ID #	Statement
003	"In essays I am good but these ones (the present task) are hard to pick..... I don't really have lots of opinions (on this)".
004	"I am not a good writer. It takes a while for things to come to me to be able to write."
005	"No, I think myself as a bad writer. Because it's hard for me to write on paper, but I do better orally."
011	"....I am average you know....well, I could state my point very clearly, but....I could state my point better if I talk."
015	"No, could use some help."
017	"Not good, not bad. I don't know (why)."
028	"No I am not (a good writer). I don't know why."
111	"Well, like short stories and stuff I can do o.k., but not essays and stuff...I don't really like (essays). I like the stories better, because you can make 'em up as you go along and if it does not sound good just rearrange it or something. (It) does not have to be like the way other people want it (the present essays), the way you want it".
208	"I am not bad, but I can do better if I tried."
318	"I don't think I am a good writer...I don't know. I am not a bad writer (either), but if I have to write, I can write something."
321	"Not bad, but sometimes like I get stuck on some subjects."